The Journal of the
American Medical Association

VOL. XXX. CHICAGO, ILLINOIS, MAY 14, 1898. No. 20.

ORIGINAL ARTICLES.

THE CLIMATE OF COLORADO FOR RESPIRATORY DISEASES.

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(*Concluded from page 1073.*)

PART II:—SENSIBLE TEMPERATURE AND THE EXPERIENCE OF INVALIDS, WITH CONTRAINDICATIONS FOR THE HIGH ALTITUDE CLIMATE.

Variability versus equability.—The study of temperature ranges assumes importance from the undue weight given by the medical profession and the laity to supposed injurious effects of thermal changes. Let us investigate and see if it is the dampness and not the thermal oscillation which is responsible for the injury. How uniformly variability goes with dryness and equability with moisture may be illustrated by the daily and monthly ranges of temperature at places which represent dry and moist climates. Chosen without reference to this particular evidence, twenty-five *dry* and twenty-five *moist* prominent signal stations and health resorts in the United States give the following remarkable average excesses of mean daily temperature ranges. The excess of the dryest one-fourth over the moistest one-fourth of them is 22.9 degrees, and the same average excess for the monthly ranges of temperature is 2.1 degrees greater variation in the dry than in the moist localities.

Again, taking the fifteen *most* and the fifteen *least variable* signal stations in the United States (out of 136 stations) for the year, we have an average excess of temperature variability of the most over the least changeable stations for spring, 18.5; summer, 16.2; autumn, 17.6; winter, 16.5, and for the year, 16.8 degrees F. The first fifteen are *extremely dry* with daily average for the year of 28.7, and the second fifteen *decidedly moist* localities with a daily average variability of only 11.9 degrees F. This evidence is conclusive that variability goes with dryness.

Seasonal ranges of temperature likewise show the inseperability of equability from atmospheric moisture, and ot variability from dryness. Compare the winter and summer temperature lines on seasonal charts. The sea is the great equalizing influence, and the colder land in winter turns these isotherms to the south for a considerable distance in the United States, viz., on the western boundary, about parallel with the coast. In the summer, however, when they leave the ocean, these lines are turned nearly as much to the north as the winter ones are to the south. The farther we get away from the humid influences the greater is the variability of temperature. It is not maintained that extreme variability should always be sought or that of two places, with all other advantages the same, the more variable one is the better. On the contrary, the less variable would certainly be preferred in cold weather. It *is* maintained, however, that variability is quite a uniform constituent of dry high places and that as the dryness predominates the marked variability is less felt and is less, if at all, objectionable. On the other hand, marked atmospheric equability, wherever found, is *prima facie* evidence of excessive humidity.

The worst that can be said against combining variability with the favorable attributes of climate for consumption is that its defence is necessary in order to overcome a prevailing prejudice and to show that this variability is a *sine qua non* of the preferable combination. But there would be no excuse for advocating a false theory of climate, even if this one element were unfavorable. There is a prevalent exaggeration of the effect of temperature changes. The change gets the blame which rightly belongs to the element of humidity, which constituent is always excessive when a given change is injurious. For instance, a change of 20 degrees from a warmer to a colder temperature, with the relative humidity 50 per cent. does not equal in the sensation or shock to the system a change of 8 degrees with the relative humidity at 80 per cent. The former change does not produce saturation, but the latter does; so does a change of 5 degrees with the humidity at 90 per cent., and even 2 degrees with the humidity a 95 per cent. of saturation (see Glashier's table). Therefore it is the humidity of the air which, through conduction of heat from the body, makes a slight temperature change, with the air near saturation, equivalent to a much greater change with the air dry. It is one of the mistakes of medical antiquity for equability to be insisted on as a constituent of the best climate for consumptives, yet this seems to be a fallacy most difficult to correct. It is essential to insist upon equability for humid climates, but for dry, cool, elevated resorts it is out of the question. There is something wrong with the reasoning powers of an author who jumbles together climatic attributes so that his "ideal climate" has no real counterpart among the known climates of the world. The trouble is chiefly with the vague use of the words equability and variability. Until now there has been no accepted line of definition between these two terms. This we should have. If the mean of variability for the whole country were taken as a just division, and the daily and monthly ranges of temperature were the criterion to decide by, we would then have a division line approximately represented by 18 to 20 degrees F. for the daily, and 46 to 48 for the monthly range, the same being in harmony with the dividing line between moisture and dryness on the writer's climatic charts. This is a fair line of division which is commended for general adoption, especially by those authors who write about equability as essential to pulmonary resorts.

Actual versus sensible temperature.—Captain W. A. Glassford, signal officer United States Army, Denver, Colo., has given much attention to comparing the actual with the apparent climate in Colorado. Omitting interesting but lengthy illustrations, he says: "Taking the city of Denver, we find that during the year there are 172 days on which the daily mean temperature is above 50 degrees F. and 64 days below 32. The 50-degree point is the lowest mean temperature which mankind considers comfortable, and it is the critical point as regards the growth and development of the most important staple crops. The same number of comfortable days prevail during the year at Albany, N. Y., as here, but instead of 64 they have 107 days with temperature below 32 degrees (freezing).

"Let us now turn to a few facts as to Colorado summers. Denver is on the line of 105 degrees extreme maximum temperature, that being the highest ever observed here. To the west of this line these extremes diminish and to the east they increase.

"I wish, here, to draw particular attention to the unfairness—unintentional to be sure—to which Colorado and the entire West is subjected in the official consideration and publication of its record of heat as affecting animal life, in that there is overlooked the important element of dryness, which moderates the sensible effect of the extremes of heat as well as of cold. There are in all temperature records two elements—the sensible temperature or that which expresses the heat or cold felt by the human beings, and the apparent temperature, a mere record of how the mechanical thermometer is affected. It is the apparent that receives publication, greatly to the undue advantage of the East and the detriment of the West.

"Strange as it has always appeared to me, the people of the West have always allowed this thermal element of climate to rest upon a common standard for the East and West, where the resultant effects are so dissimilar, in that the important factor of dryness of the air is entirely overlooked. The West should insist upon the publication of the sensible temperature, that is, what is technically known as the reading of the wet bulb. We would understand then why the high thermal conditions, apparently the same, do not here cause the cessation of business, prostration or death to man or beast, as among our Eastern neighbors. The difference between the apparent and the sensible heat in this vicinity being many degrees, explains our extreme comfort, while summer prostration in the East is explained by their slight range of difference. The very highest official record of heat at Yuma, Ariz., is 118 degrees, but the sensible heat at the time—that in the reading of the wet bulb—was 32 lower or 86 degrees. In the Eastern States 86 degrees of sensible heat is not uncommon when the thermometer stands in the nineties."

Besides the quality of stimulation which is associated with variability, there is an important consideration in the purifying of the atmosphere which variability indicates. This happens through the alternate expansion of the air by heat and its contraction by cold together with the nightly chilling and sometimes freezing, which regularly render it inimical to germ life. The purity of the atmosphere which is represented by warm, moist and equable climates, is not to be compared with that purity which is represented by the opposite attributes. The first is where the temperature keeps within the limits of the microbe's needs, where sound as well as heat is smothered within a short distance and the sun's rays give a dusky red glow. The second, indicating a comparative absence of germs, is where exposed meat can cure and not spoil, where distant objects appear near and where the unobstructed rays of the sun give nearly as white a light as an electric lamp does.

Diathermancy preferred to dense, moist or smoky atmosphere.—This diathermancy is the clearness or transparency of the air, which is a decided indication of its purity. It is with the atmosphere as with water. The larger the lake, with perfectly clear water through which one can see to a great depth, the better is the evidence of purity. So a large area, having throughout a similar atmosphere, through which one can see to most remarkable distances, must indicate as its coldness, rarefaction and dryness do, that the purity is approaching the absolute. This increasing purity of atmosphere, the absence of dust, smoke or moisture with its attendant infusoria is a decided feature of elevation, because with each rise of 1000 feet an equivalent stratum of air has been left below and, according to Professor Tyndall, each higher successive stratum contains less and less of infusoria. Professor Miquel of the Observatoire de Montsouris, near Paris, has achieved a result in the analysis of the air which is very interesting in this connection.[1]

Miquel found the following numbers of bacteria in ten cubic meters of air taken as nearly as possible at the same time at the respective places: At an elevation from 2000 to 4000 meters, none; on the Lake of Thun (560 meters), 8; near the Hotel Bellevue, Thun, 85; in a room of the Hotel Bellevue, Thun, 600; in the Park of Montsouris (near Paris), 7600; in Paris itself (Rue de Rivoli), 55,000. These figures are certainly suggestive of the fact that atmospheric purity keeps pace with diathermancy. A rule for the average change in diathermancy, for each rise in elevation, was devised by the writer in 1876 from consecutive observations of the sun temperature at 2 P.M. and at different elevations[2]: *For each rise of about 235 feet there is one degree greater difference in temperature between sun and shade at 2 p.m., as shown by metallic thermometers.*

The distribution of atmospheric moisture closely coincides with that of the soils. The dry soils, the rocky and sandy portions of mountainous configuration, and the dry sandy loams, with rapid absorption of air vapor and radiation of heat, nearly represent the dry climates. *Per contra*, the clay soils and marshes of level sections, with their moist cold and the easy solution of organic substances, are closely associated with the moistest atmospheres, excepting where humid currents come from over large bodies of water. This correspondence with reference to broad areas becomes strong proof of the utility of our preferable combination of climatic attributes.

A mountainous country, aside from the benefit of elevation, has many advantages over a level region. Chief among these are the quick drainage, which allows of no detention of stagnant water, the greater surface of the earth exposed to absorb atmospheric moisture, the many faces of rocks, etc., favoring radiation of heat and reflection of light, the element of stimulation, both atmospheric and electric, the controlling of severe winds, the variations of scenery, temperature and exposure afforded and the facility

[1] "Chronic Pulmonary Phthisis," by Hermann Weber.
[2] Rocky Mountain Health Resorts.

with which one can indulge in climbing hills and in pleasurable out-door activities. When these advantages are compared with the moisture-retaining properties, the sameness, the "siroccos," the trade winds, and the "northers" of level regions, one easily chooses between them.

The changes in the atmosphere accompanying the variability of temperature of mountainous places are decidedly electric. There is an increase of electric tension and there is an easier and more frequent interchange between the positive electricity of the dry air and the negative quality of the ground and clouds. The condition is very stimulating. This quality in high altitudes is associated with light showers, especially in summer time when they are most needed to clear the atmosphere. The simultaneous whirl of a light wind, often seen at a great altitude, purifies by its substitution of an unused and fresh supply of air for that which may be impure. Where people crowd together in large numbers, the daily freezing of the air is the only sufficient substitute for a mild wind. We thus arrive at the conclusion that in densely settled sections continuous stillness of the atmosphere is only to be preferred in the freezing weather of winter. The warmer the atmosphere the more air movement is desirable.

It is where there is a total absence of land influence, as at sea and on islands far out, or on dry, sandy coasts, with favorable sea winds prevailing, that low altitudes may best be substituted for high ones. The malarial and organic emanations from the soil, which are a fruitful source of increased mortality from consumption (Buchanan and Bowditch), are thus excluded from the climatic calculation. The aseptic condition of the atmosphere out at sea (Miquel), its quality of stimulation, and the tonic effect of the change, including the improvement of appetite and digestion, are all akin to the best effects of high altitudes, though the elimination of septic germs is less perfectly performed.

The evidence of experience.—This is in harmony with these favorable climatic attributes. One difficulty is our inability to make use of statistics of low lands which are fair for comparison with those which have been tabulated for high altitude stations. We have to explain in this connection, that the term "cured" should be qualified as meaning a more or less permanent arrest of disease, and that the records given, embrace only those treated during a limited period by any of the observers.

The tabulated records at hand of careful and trustworthy physicians, show the favorable results in both the Swiss Alps and in Colorado (4500 feet and upward) to be as follows: For all stages of the disease, of 247 consumptives treated in the Swiss Alps, 38 per cent. were "cured" among 72 per cent. benefited. In Colorado 462 cases, 35 per cent. are recorded as "cured" among 75 per cent. benefited. This slight difference in percentage should be explained as quite natural considering the variable times of treatment, and the diverse interpretations by different physicians of the extent of the disease and of the relief afforded. Colorado really has many advantages over Switzerland as an all the year round resort, and also in the facility afforded to graduate the altitude to the season of the year.

In conclusion it is apparent that the element of altitude is inseparable from the best climate for chronic pulmonary diseases. The natural question then follows: What is the limit up to which this combination of qualities can be carried that the best results may be obtained? This is a question of individual adaptability which has to be settled by the attending or consulting physician. The best method of settlement is to determine what conditions or diseases are suitable for the extreme or the preferrable combination of attributes, and then arrive at modifications or rejections of the high climate cure by a system of exclusion. This method is that always advised by the writer (Rocky Mountain Health Resorts), and is seconded by the extended experience of Jaccoud as given in his work on "The Treatment of Phthisis." Jaccoud's conclusions are in the main correct, but it must be borne in mind that they, like those of Tucker Wise, Hermann Weber, and most of C. Theodore William's records, pertain to a more northern latitude than we reason about in the United States. In the Engadine, in Switzerland, the limit of timber growth is at or below 8000 feet, an elevation compared with a similar limit at or above 11,000 feet in Colorado. Here the gradual rise, the distance from the sea, and the peculiar protection of mountain ranges make the change from low levels less severe. Also, in America, we have an increased advantage over most of European high climates in that we keep up the curative effect by suitable increase of altitude in summer. Instead, they are compelled, as at Davos, St. Moritz, etc., to give up the chosen climate treatment during the warm weather. The plan of deciding if the preferable climate can be made use of in a given case by exclusion because of negative conditions will not be readily accepted by the over-zealous advocates of low climates. This is, perhaps, because generally speaking, the more reasons there are for exclusion from the better high climate, the less likelihood is there for an ultimate recovery. Besides, it is not always easy to decide what change of climate a given patient can have, because of the varying conditions to be weighed, both as to the patient and as to the climate. We have to summarize by saying that the preferable climate for the great majority of consumptives in the United States varies, according to the case, between over 2000 feet elevation in the north in winter, and 10,000 feet as a possible extreme in the southern portion in summer. As to patients, not omitting social and economic bearings, they vary also, all the way from those cases that are hopeless to those that are to prove curable. There must then, of necessity, be many very delicate and intricate questions to be decided by the attending or consulting physician. Of course, then, any rule of procedure must be susceptible of much variation. The physician who takes the most factors into account and weighs them best will be most successful in the management of each individual case. With this broad proviso we will state some general reasons why a given invalid may *not* go to an otherwise preferable high climate, and thus emphasize those who *may*. Assuming that he can relinquish home and business cares and is financially able to remain from four months to two years away from home, or better, perhaps, make a permanent residence where he recovers, then the following are what we may consider as possible contraindications to a climate above 5000 feet elevation, such as that along the eastern base of the Rocky Mountains from Wyoming through Colorado into New Mexico and northern Arizona.

POSSIBLE CONTRAINDICATIONS.

1. The coldest season of the year, intensifying the effect of altitude too much for very delicate and sensitive persons, coming from much warmer climates.

2. Advanced age of the individual, rendering acclimatization difficult; "senile phthisis" and the fact that the patients are too old and feeble to exercise out of doors.

3. A very excitable nervous temperament, aggravating the stimulation of the high climate, producing irritability, and possibly wakefulness in a few extreme cases.

4. The state of some women, because of a greater susceptibility and lesser adaptability to the change and to out-door life than men have.

5. Valvular heart lesions, with rapid action of the heart, especially with the previous exceptions. Diseases of the great vessels, such as aneurysm.

6. Marked and extensive emphysema, pneumothorax, and hydro-pneumothorax.

7. Active pneumonia and existing hemoptysis. If the pneumonia or the hemorrhage is recent, the contraindication amounts to little; if remote, such cases are usually favorable. If there is reason for doubt in any such hemorrhagic or inflammatory case, a gradual rise in elevation should be advised.

8. Very high body temperature, whether it is rather constant, as in some inflammatory states or in catarrhal extensions beyond a tubercular center in the lung, or whether it is regularly vacillating, *i.e.*, daily subnormal in the morning, and regularly up to 103 degrees or more later in the day, especially in so-called catarrhal phthisis and in laryngeal tuberculosis (unfavorable cases anywhere).

9. Too extensive involvement of lung tissue in diseased action, *i.e.*, so that the healthy spirometric record is more than one-half abridged.

"Phthisis with double cavities, with or without pyrexia; cases of phthisis when the pulmonary area at low levels hardly suffices for respiratory purposes" (C. T. Williams).

10. The active stage of lung softening, if accompanied by daily fever, or in one of a decided hemorrhagic diathesis. "Quick consumption" with or without intestinal ulceration or albuminuria (without predjudicing such a case if the acute symptoms are abated).

A proper estimate and consideration of these ten possible modifiers of the high altitude prescription tend to give the physician confidence of success in sending to well chosen elevated regions, such as the plains and foothills about Denver, incipient and first-stage tubercular pulmonary invalids, particularly if they are hemorrhagic or inflammatory cases without high fever, persons not too old and of fair resisting powers, and those with advanced or third-stage disease with a unilateral cavity already well protected by a conservative fibrosis.

The time to remain in a climate in which recovery seems to have taken place is a more delicate question than is generally considered. This is because tuberculosis is apt to be rendered latent by the climatic treatment and by nature's healing plan—the fibroid or hardening process. It is often essential not only that a patient should reside permanently in the new immunity climate he has reached, but that he should adopt a new and outdoor active occupation, in order to obtain the best results. In less urgent cases, encouraged by the absence of all physical signs of disease during a year or more, by gain in weight and by normal spirometer and manometer records, patients may return to their former homes to live with comparative safety. Many, however, find themselves deceived as to their real condition when they return to their old haunts and confined occupations.

The three principal agencies of relief or cure of tuberculosis thus far discovered, independent of a possible specific (some modification of tuberculin) to produce immunity, are diet, exercise and climate. These, rightly employed, tend to render the disease latent or innocuous through the process of fibroid healing in the lung tissue. The body resistance is strengthened, but the tuberculosis being latent, the individual has the same fight to go over again (it may be with a more unfavorable outlook) if he does not accept and act upon the lesson of experience. His climate, occupation and his habits of life, as to exercise and feeding, must thereafter coincide with what he has found to be most beneficial in his health-seeking journeyings.

Asthma and hay fever.—The name "hay fever" is a misnomer as applied to the breathing disability of many people, since the growth of hay has to do with only a small proportion of these cases. The causes are various, and whether having to do with the flowering of apple blossoms, the pollen of corn or of the Roman wormwood, nervous shock or to the dustiness of "dog-days," the fact remains that four-fifths of these so-called "hay fever" subjects are prone to cough and asthma. The nature of the affection is, like asthma, of nervous origin, and the best mode of relief in many cases is, much like that of asthma, to get out of the region of excessive vegetation into the rarefied air of the mountains.

One of the most troublesome complications in some of these "hay fever" cases is the asthma. The author gives it as his opinion, based upon an extended experience in Colorado, that there is no cure for pure and simple asthma equal to a resort to a well chosen high altitude such as the cool, dry and sunny inland plains and lower mountains of Colorado.

There is a prevalent misconception about this question of asthma, which explains the non-recognition of the above truth, by many sufferers or by their medical advisers. It is not well enough understood what emphysema is, that it is not asthma, but rather the result of it. Asthma is a nervous disease. It produces the undue spasm or contraction of the circular muscular fibers of the smaller bronchial tubes, and the consequent hindrance to the air-circulation, or free inspiration. On the contrary, emphysema is a mechanical state of the vesicular portions of the lungs which complicates such conditions as asthma, whooping-cough, bronchiectasis (dilated tubes) and bronchitis, until there exists a more or less permanent disability of the air-cells, leading to their over-distension and the loss of their natural elasticity. Hence the difficulty and incompleteness of expiration. The one condition — asthma — hindering inspiration, is helped and sometimes immediately relieved by elevation; while the other—emphysema—hindering expiration, is sometimes made worse by the same element of air rarefaction. This is because the affected air-cells and distended bronchial tubes in emphysema are still more crowded with air, especially under any physical exertion, by the necessity to breathe more air in the mountains, in order to get the required amount of oxygen. Therefore, those of the "hay fever" class who have, or are prone to asthma, might be expected to

find much relief, or a cure for the time being, in the high altitudes of the interior of Colorado. Pure and simple asthma usually meets at Denver, or in the hills to the west, with an elevation, aided by the sparcity of vegetable growths and the pollen-producing plants, which prevents the spasmodic contraction of the bronchial tubes, and the cure for the time of sojourn is established.

Malaria.—The aid of the high climate in eliminating malarial poison from the system of a person so charged, is a subject worthy of notice. The suspicion that malaria, like la grippe, bears a near relation to tuberculosis is firmly fixed in the minds of some physicians. So the opposite climatic conditions to those which produce the malarial complications are the more trusted to wear out these evils. It is rather a confirmation of this eliminating process that the chills, when one comes up here with them, are sometimes aggravated at first. The general result, however, is good. The elimination of the malarial poison, which many sojourners in Colorado from Texas and the Mississippi Valley have shown by their happy experiences does take place, constitutes the removal of one of the most fruitful sources of pulmonary consumption. Thus the fascination is explained which the high altitude climate has for many people, who have left behind them the "epidemic shades" of these low sections.

In sending invalids to Colorado, a correct diagnosis is an essential condition of success; for, the physician of much experience in high altitude resorts has to acknowledge that too many failures or limited recoveries can be accounted for by a previous neglect to duly estimate a lung disease as farther advanced than it had been announced, or by a failure to sufficiently recognize the damaging association of "mixed infections," such, for instance, as arise from other blood taints than tuberculosis, or from the non-recognition of the co-existent or causative effect of fermenting blood states, due perhaps to dyspepsia, or to the non-elimination of effete material, as in amenorrhea, with or without constipation.

Allowing patients to go to high altitudes as a *dernier ressort*, who have not a 5 per cent. chance of living six months anywhere, is strongly deprecated. It should be remembered that every rule has its exceptions, and the stated contraindications named may perhaps be neutralized by favorable circumstances, such as the best time of year for the change, previous experience of the individual in high climates or the combination of compensating conditions in the same patient.

The seasons.—These natural divisions of climate necessarily influence the journeyings of invalids, the time of going as well as the choice of the destination. The lack of space here to introduce them, and the advantage of the medical advisers to have on hand an ever ready reference to all important seasonal weather records, leads the writer to refer for all these data to his seasonal humidity, temperature, rain, wind and cloudiness charts.

The question of the season of the year is one of no small importance, notwithstanding the general truth that the best time for a person to go is when he has to, because of the beginning of lung trouble and not as a last chance. For one who really needs the change, there is no better time than the present. The season of the year does not produce so much difference in the indications for a given invalid's hastening away as does the advance of the disease from incipiency, or the first stage, to the ominous second stage, when the lung is "going to pieces." While the summer is by far the most satisfactory season to be in our mountains, and the autumn is a good season to get acclimated to a given high altitude before cold weather comes on, yet many maintain that the best results obtained by those suited to the rarefied air cure, are secured in the winter season. On the other hand, others not so well suited, such as neurotic persons, those unable to exercise outdoors because of advance of disease or extensive fibrosis leading to marked dyspnœa, or those with too sensitive mucous membranes to stand the cold, stimulating and dry out-of-door air, may do well to modify the effects by going first, via Texas perhaps, to southern New Mexico, Arizona or California, during the months from November to March, intending to reach Colorado afterward.

To this conclusion then we have arrived, namely, that for the great majority of cases of consumption this adaptation will be most fully secured in the dry, cool, rarefied, sunny, clear and pure, though variable, atmosphere of a well chosen high altitude, such as is fittingly represented by the region along the eastern base of the Rocky Mountains.

THE ADMINISTRATION OF ANESTHETICS.

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A man who desires to study medicine can find many places in Chicago where they will undertake to teach him, but I do not know of any place where they will teach him to administer anesthetics. There are many places where he may learn but no place where any provision is made for properly teaching the subject.

The student is not left to his own resources in the treatment of cases which come to the dispensary, but such treatment is always under the supervision of a teacher. The administration of anesthetics, however, is one thing which he is called upon to do practically without any instruction. This is one of the most difficult tasks to satisfactorily accomplish, one where skill, experience and personal judgment are required in the very highest degree and where rules are so obscured by exceptions as to be nearly useless. Yet such is the inertia of college management that after fifty years use of anesthetics, medical faculties are not yet awake to the necessity for adequate instruction in this very important branch of the medical art.

Many of the diseases which the student sees in the clinics will never be seen by him, as a general practitioner, in after life; many operations watched, he will never be called upon to perform, but no student or practitioner will escape being sometimes called upon to administer an anesthetic. Every case of disease brought before the classes in the medical colleges is utilized to the utmost as material for imparting instruction, except the numerous anesthesias. In these cases all the attention of students and teachers is concentrated on the operation, though it may be nothing more than opening a boil.

One reason for this apathy may be the fact that nothing can be learned about the administration of anesthetics from a distance even so great as the front row of seats in the amphitheater and, as but few per-

sons could get near enough to the patient to observe the phenomena of anesthesia, this source of instruction is wholly neglected.

A student will learn more in administering one anesthetic under the eye and direction of a competent instructor than by the administration of twenty, if left to his own resources. At present every student must get his skill by the hardest kind of experience and at an entirely unknown expense to his patients. He is called into the amphitheater and told to anesthetize a patient; he either gets no instruction at all or only that which some other student, who may have anesthetized two or three patients, is able to give him. He knows only what he has been able to learn from his seat in the amphitheater and that is little more than the fact that the patient's face is covered and the anesthetic poured on till he no longer moves. That this is playing at odds with death may perhaps be appreciated when it is realized that many times during the maintenance of anesthesia, safety or great danger, even death, depends on whither the anesthetist's judgment prompts him to give a little more air or a little more anesthetic.

These conditions will justify our writing on this subject with especial reference to the needs of the student who wishes to be able to give an anesthetic skilfully with safety to the patient and satisfaction to the surgeon. The student in this case includes not only the man in and just out of college, but also the practitioner who does not consider himself proficient in producing and maintaining general anesthesia.

The college clinic is the legitimate place for acquiring this experience and if properly conducted would turn out skilled anesthetists. The dispensary or clinic patient is entitled to the same consideration and treatment as is accorded those in private practice. In either case the anesthetist should try to make the acquaintance of the patient some time before the hour set for the operation and gain his confidence so far as possible. If he can control the patient, a few days preparation is a great advantage. In that case, examine the urine carefully for evidences of nephritis and ascertain whether the excretion of solids and urea is normal. Give the alimentary canal a thorough cleaning, and a few hours before the operation, the lower bowel a flushing. The patient should abstain from food for twelve hours before the operation, if this time includes a night's sleep; half that much daytime is enough; he should take no water within two hours of the operation. If the operation be done before noon the patient should have no breakfast, but about two hours before the time set should be encouraged to drink two or three glasses of water, preferably hot; this and the flushing of the bowel will usually prevent that dreadful thirst which follows anesthesia, the gratification of which causes such violent vomiting, which wears out the patient and affects adversely the result of the operation. For this reason castor oil is a better cathartic than the salines, as it does not abstract so much water from the system and is therefore less likely to produce thirst.

The heart and lungs should be examined carefully; in fact, the general condition of all the organs of the body should be known as far as possible.

It usually happens however, that the anesthetist does not see the patient until the hour set for the operation (in which case he must trust that the surgeon has seen to all these preliminaries) and he is frequently told "the patient is in that room, go in and get her to sleep as quick as you can." This I would not do. Insist that either the family physician or the surgeon take you into the room and introduce you to the patient. In doing this, he should assure the patient of your skill and of her safety in your hands. The anesthetist should then spend a few minutes talking to the patient and examining her heart. This should be done for the purpose of impressing the patient with your carefulness, even though you know that examination has already been made by a competent person. Assure yourself that there are no foreign bodies in her mouth; rub a little petrolatum on her lips, nose and cheeks so as to lessen the danger of blistering the skin with the anesthetic; place the mask over the patient's face and tell her to close her eyes as the anesthetic is irritating to them. Tell her to breathe regularly and rather deeply and to count after you; explain that sensations of suffocation are felt by most patients; that they have no adverse significance and will pass away after a few deep inhalations. In giving chloroform, tell her that every time she counts you will pour on a drop of chloroform. If the patient is very nervous, continue the counting a few minutes without giving any anesthetic. It is wonderful how this will, in many cases, bring down the pulse and steady the breathing. Then begin the chloroform, drop by drop, very slowly at first and more rapidly as the patient's voice indicates that unconsciousness is approaching. In this way patients are often put to sleep without experiencing any unpleasant sensations whatever, and seldom will there be any sign of the stage of excitement. After anesthesia is begun, the patient should not be moved any more than is absolutely necessary. If the patient is a man (or a woman who is not nervous) it is better to put him on the operating table before beginning with the anesthetic. The room should be quiet, no talking being allowed except that between the anesthetist and the patient; they should not be alone, however, unless some one is within immediate call to render assistance should any be necessary. A quiet room and an unexcited patient are the best possible conditions for the safe and easy induction of anesthesia.

From the beginning to the end of the operation the anesthetist must devote his entire attention to the condition of the patient and the conditions which conduce to the safety and the success of the operation. He must not watch the operation, though he must know in a general way how it is progressing, so that he may be prepared for any emergency. He must control the temperature and ventilation of the room, being less actively engaged than the surgeon he is better able to judge of the effect of these conditions on the patient. He must remember that the anesthetic is a drug, the administration of which very materially lowers the temperature of the patient, and he must insist that all parts of the body, which are not necessarily exposed, be thoroughly protected from cooling, by proper covering and hot water bottles when necessary. He must direct that the bed be properly warmed and prepared for the reception of the patient at the close of the operation, and must remove or superintend the removal of the patient to the bed. He must remain by the bed until the patient revives, and then give careful directions regarding care till recovery from the anesthetic is complete. The patient should be without a pillow for an hour or so, or until well recovered, though she should not

be allowed to lie with head hanging back in an uncomfortable position. If the patient is very weak or there has been much shock, the foot of the bed may be elevated.

Do not make a practice of giving drugs before or during every anesthesia. Occasionally, surgeons insist on giving a hypodermic of strychnia before beginning the operation, thinking that this helps to keep up the circulation and lessen shock. I have some times thought a hypodermic of morphin half an hour before beginning with the anesthetic, facilitated the production of anesthesia.

Resisting patient.—The greatest care is necessary in anesthetizing persons who actively resist. This will seldom happen except in the case of children; they will sometimes cry and scream and take deep and forcible inspirations. Under such circumstances, if the vapor of the anesthetic is concentrated, they may absorb into the blood, at one inspiration, sufficient of the anesthetic to completely paralyze the heart. I saw chloroform administered, under these circumstances, to a boy 14 years old. He was screaming at the top of his voice, and a napkin saturated with chloroform was placed over his mouth just as he took a powerful inspiration. Instantly his cry was checked, and he dropped as though he had been felled with a club. For a minute there was no sign of pulse or respiration, though I could hear a faint fluttering with my ear over his heart. In a moment there was a wavering pulse at the wrist, then it could be counted at 180. Respiration began slowly, and in ten minutes it was natural, but light, and the pulse had dropped to 120. The anesthetic was then resumed, though consciousness had not returned, and no further trouble was experienced. One can realize the character of the drug he is dealing with when it is known that a single inspiration of its vapor is capable of rendering a struggling boy instantly unconscious and keep him in that condition for ten minutes or more.

Ether and chloroform.—Ether should not be used on patients having diseased kidneys, as it may produce congestion of these organs and be followed by suppression of urine. Chloroform is less liable to produce this result. Ether is more dangerous than chloroform if the patient has atheromatous degeneration of the blood vessels. Ether stimulates the heart's action while chloroform depresses it, and any increase of pulse tension might rupture a diseased vessel. Emphysema, asthma and chronic bronchitis are aggravated by ether, and, where these conditions exist chloroform is to be preferred. In administering ether it is very important to begin very slowly, as concentrated ether vapor, suddenly coming in contact with the mucous membrane of the respiratory tract, is very irritating and may produce spasm of the larynx. If given slowly there will be less trouble from the secretion of mucus in the mouth and throat; there will be less nausea afterward and the patient will recover more quickly. Death from ether is said to be by asphyxia and not from syncope, consequently respiration ceases first when death occurs. Ether is said to be safer than chloroform in the hands of the unskilled, but that should never be made an excuse for trusting this duty to the inexperienced, except where it is absolutely necessary. Unfortunately, the inexperienced are too often allowed to administer anesthetics without adequate supervision. Too often the anesthetist is more interested in the operation than he is in the administration of the anesthetic. This is wholly inexcusable and should death occur under these circumstances it should be ascribed to criminal carelessness. Ether has been known to take fire fifteen feet from a gas jet, hence great care must be exercised in administering it at night. The container should be of tin, not of glass, and it should be securely corked in the intervals of use. The vapor is nearly twice as heavy as air, and in a still room it will settle to the floor and flow along it for a considerable distance before diffusing into the air. Hence a fire low down, as in a stove, is more dangerous than a gas jet high up.

When chloroform is used in a closed room, where there is a light, the vapor is decomposed, chlorine is set free, and some compounds formed which are very irritating to the respiratory tract. A towel saturated with ammonia and hung up, or a little ammonia scattered about will lessen this difficulty. Chloroform is more rapid in its action, less irritating to the respiratory passages, less unpleasant to the patient, less liable to cause nausea and vomiting, and produces less bad after-effects than ether.

The anethetist should bear in mind that when the anesthesia is prolonged it will require less of the anesthetic to maintain that condition than it did at the beginning.

Breathing.—While every sign which will give any indication of the patient's condition, is important, the character of the breathing is most important of all. The ear rather than the eye should be depended on for the assurance that the patient is breathing properly, for the chest may continue to rise and fall regularly and no air enter the lungs. The ear will instantly detect this condition, as the sound of air entering the trachea and the bronchial tubes is unmistakable. Snoring is an assuring sound, but the stertor produced by a partial closure of the glottis is ominous, and the moment it is heard the jaw must be brought more forcibly forward; if it does not cease then, the anesthetic must be discontinued until the condition is corrected.

It sometimes happens that the patient will take a long inspiration, like a sigh, due to some manipulation of the surgeon; when this occurs, the inhaler must be removed until the breathing is again natural. It is not necessary nor is it advisable that the anesthetist should concentrate his attention on the breathing or, in fact, on any point; his ear should be so well trained that it will instantly call attention to the slighest change in the character of the respiration, even while his attention may be directed elsewhere. It not infrequently happens, when the patient is just sinking into unconsciousness, that he will hold his breath; if the pulse is good this is not alarming, and the inhaler need not be removed; however, if there is any doubt as to the condition, the anesthetic had better be stopped until breathing is normal.

I have anesthetized two such patients, and in both cases it was necessary to perform a sort of artificial respiration by strongly and intermittently compressing the chest before complete anesthesia could be produced.

The Pulse.—The anesthetist should keep one finger constantly on the facial or temporal artery; without directing much attention to the pulse he will thus be warned if any marked change takes place. At the beginning of anesthesia the pulse will often be very rapid, due to the excitement of the patient, but as soon as unconsciousness is complete, it usually be-

comes much slower. With chloroform, it will be weaker and with ether, stronger. If the pulse is intermittent before beginning the anesthetic, as in excessive users of tobacco, it forbodes trouble and it behooves the anesthetist to be especially on his guard and to have assistance at hand prepared for any emergency. I administered chloroform to a man with "tobacco heart" on three different occasions. On the first and second his respiration stopped twice and resuscitation was slow. At the third ordeal I succeeded in escaping this complication by stopping the anesthetic every few minutes. I once gave chloroform to a man for an exploratory laparotomy whose pulse went up to 180 as soon as I began and remained at or above that figure during the entire anesthesia. The diagnosis in this case was alcoholic liver. In severe operations it may sometimes happen that no pulse can be felt at the wrist when the hand is held up, but the pulse reappears when the hand is lowered. All sorts of variations of the pulse may exist without serious consequences resulting, but only the steady regular pulse is assuring to the anesthetist.

The pupils.—The appearance of the pupils furnishes valuable indications of the condition of the patient. On beginning the anesthetic they dilate, then contract till normal or a little smaller and usually remain contracted during the maintenance of safe anesthesia. If they are dilated and respond to light, it indicates that the anesthesia is not profound, if dilated and do not respond to light it indicates that the anesthetic has been pushed to a dangerous extent and it must be instantly stopped, the variations of the pupils in different individuals is so great that too much must not be risked on their appearance. Occasionally the pupils will be as small as pin heads. I do not know that this has any significance but I am never at ease under these circumstances until the operation is complete. It is well, in such cases, to inquire whether the patient may not have been given a dose of morphin a short time before. Occasionally, the pupils will be very much dilated throughout the anesthesia, and this too is a disquieting condition. In fact, any variation from the conditions usually witnessed is to be looked on with suspicion and the vigilance of the anesthetist redoubled. On one occasion an anesthetist watched a patient's pupil for ten minutes without seeing any change whatever, nor was it affected by light when the lid was raised. Becoming alarmed he looked at the other eye and found that pupil much smaller than its mate. He called the attention of the surgeons to the anomally but they could offer no explanation. Picking up an instrument he touched the cornea with it and discovered that the eye was glass.

Color of the face and lips.—The color of the lips and face should be noted before beginning the anesthesia, for any marked change in their appearance indicates impending trouble. If the face becomes blue it shows that the patient is not getting enough air and the inhaler must be at once removed. I have on two or three occasions seen an ashy paleness suddenly spread over the face and in every case the patient had already, or immediately did, quit breathing. The color of the face is a valuable indicator in women, but is less useful in men. A patient with bright red lips or rosy cheeks is not in any immediate danger from the anesthetic.

Clothing.—The patient should have on no more clothing than is absolutely necessary and what clothing he has on should be easily removable so that if soiled, as is likely to be the case, it can be changed without too great disturbance of the patient. Clothing about the chest and throat should be loose. A woman wearing a corset is not a fit subject for an anesthetic. Care should be exercised that the surgeon or his assistants do not rest their elbows on the chest of the patient; they may unconsciously bear down so hard as to seriously interfere with respiration.

Position of the patient.—In giving anesthetics for dentists you must insist that the patient be placed in the recumbent position. Require the dentist to lower the chair till the patient is horizontal, then when the patient is asleep the chair may be raised a little so that the dentist can pull the teeth, but as soon as that is done the chair must be again arranged so that the patient's head is on a level with his feet.

Position of the arms.—The patient's arms should be folded across his chest unless in that position they interfere with the surgeon. They should not be raised above the head unless absolutely necessary as this position interferes with respiration. They should not be allowed to hang down over the edge of the table for this is liable to produce paralysis. I usually pin the sleeves of the patient's night dress across his chest. In putting the patient into bed care must be taken of the arms lest they become folded under the body, when a fracture or dislocation might easily occur.

While totally unconscious, the patient must be watched as closely after removal to the bed as while on the table, because moving is likely to cause vomiting and, unless care is taken, the vomited matter may be drawn into the lungs and do damage, even to complete suffocation.

Droppers and inhalers.—For chloroform, I use a common wire mask covered with one thickness of linen; for this purpose, I have pieces of old napkins or tablecloths. These are cut so as to project in a sort of ruffle, about an inch beyond the mask, all around except at the top where it is cut close to the wire in order to leave the eyes uncovered. This margin can be held down with the left hand if the patient is getting too large a proportion of air. These pieces of linen have two holes by which they are fastened to the mask and are bound on the edge with tape, or hemmed. These are used but once and then sent to the laundry. I know of no habit more filthy than that of anesthetizing patient after patient without changing the cover on the mask, as is done in some clinics.

For ether, I like the towel about a folded newspaper about as well as any of the elaborate patent inhalers in the market. Its simplicity and cleanliness are much in its favor, yet the ease with which the patient can be asphyxiated by a careless anesthetist renders it less satisfactory than it otherwise would be. For dropping chloroform, I use a two ounce bottle with a notched cork. A useful contrivance used by some anesthetists consists of a wick of cotton reaching from the bottom of the bottle to an inch or so outside of the cork, which is gently inserted into the mouth of the bottle. This acts on the principle of a capillary drain and the rate of flow is regulated by the angle at which the bottle is held and the tightness of the cork. I have never been able to satisfactorily regulate any of the patent droppers and regard them as wholly unnecessary. No special vessel is needed for ether, as it can be poured out of the container in which it is bought.

Preparation of the table.—In private houses where they do not have a trained nurse, the anesthetist should see that the table is properly prepared for the comfort and safety of the patient To this end, fold a quilt or blanket lengthwise, twice, so that it will be four thicknesses; lay this on the table; cover it with several thicknesses of newspaper, and over this throw a sheet. The blanket will be longer than the table and the extra length can be folded under at the head for a pillow, this will make the patient's head lie more comfortably than it would on a pefectly level table, and an ordinary pillow is usually too high. If an emaciated patient lies on a hard table during a protracted operation, decubitus may ensue. These pressure ulcerations are very hard to cure and add very much to the gravity of the case. If there is a carpet on the floor of the room in which the operation is to take place, a lot of old newspapers spread on the floor will protect it from damage. Such a precaution will be appreciated by the family though they would not think of it unless mentioned.

In curetting and other vaginal operations where much water is used, the clothing sometimes gets saturated to the patient's head. If there is no appliance at hand, such as a rubber pad, to prevent this, it may be avoided in a large measure by placing a couple of blocks of wood under the legs at the head of the table.

Let every man who is called upon to administer an anesthetic give the strictest attention to his work, remembering that it is second in importance only to the work of the surgeon; that it often requires more skill than is required of the surgeon, and is frequently attended with greater danger to the patient than is the operation. Then there will be more skilled anesthetists and fewer "unavoidable" deaths from anesthetics.

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OPERATIVE TREATMENT OF IRREDUCIBLE DISLOCATIONS OF THE SHOULDER JOINT, RECENT OR OLD, SIMPLE OR COMPLICATED.

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(*Continued from page 1098.*)

25. *Irreducibile dislocations, old, spontaneous, or pathologic.*—No case similar to such cases of the coxo-femoral articulation has been found on record.

26. *Irreducible dislocations, old and paralytic*, are irreducible simply because they can not be kept reduced, although they are readily replaced in the socket, because the muscles have lost their power through paralysis of their nervous supyly from peripheral or central causes. The peculiar joint diseases described by Charcot, specially in connection with locomotor ataxia, are also cases in point. The treatment should be directed to the cause. In irreducible old dislocations from paralysis of the deltoid, expose articular surfaces, pare them and let them become anchylosed. The following is a case in point: Julius Wolff, 1886.[108] Irreducible dislocation, old, downward (paralytic), posterior incision, reduction, stitching of head to glenoid cavity, result, improved. Male, aged 5 years. *Diagnosis:* This was a perpendicular luxation of the shoulder, downward, due to severe accident, and a traumatic myopathy. The head of the humerus had sunk about three centimeters from the acromion and glenoid cavity, so that one could easily push a finger into the space between the head and the acromion. *Duration:* Three years. *Movements, etc.:* The right scapula is slightly dislocated on keeping the arm quiet. The lower angle of the scapula stands off from the thorax and the angle, and the lower part of the inner border is nearer the spinal column on the right than on the left side. The arm hangs close to the thorax and moves like a pendulum when the patient, by changing the position of his body, starts its movement, or when one pushes the arm in any position it will swing back and forth without the will of the patient. The humerus is thereby rotated inwardly, so that the greater tuberosity points inward and the lesser tuberosity backward. The sulcus (intertubercularis), between the tuberosities is easily palpable and appears as deep as in the dry bone specimen. Acromion processus coracoideus, and the upper rounded, depressed and lowered head are prominent and are easily distinguishable. Patient raises the scapula and abducts the angulus scapulæ. The arm does not follow the movements of the scapula. When the patient makes a great effort he can, for a moment, raise the caput humeri and scapula, so that it may be at its normal height. More certain, and then only for a moment, the caput humeri will reach its normal height by reflex when one gives the patient a sudden blow on the back. Should the patient desire to elevate the arm he moves it, with the body, outward, with a swinging motion, pendulum-like, and then catches the right hand with the left and raises it. Atrophy of the deltoid so marked that if one attempts to grasp it with the fingers almost nothing could be seized. The supraspinatus and pectoralis major muscles were less atrophied, as well as the muscles of the forearm. However, the muscle pectoralis major is weak and only acts on fixing the head of the humerus, whereas, the muscle latissimus dorsi is under the same circumstances stronger. Every other action of the shoulder joint is impossible. One can passively move the humerus in any position of luxation or subluxation. The shortening of the injured upper arm in comparison with that of the healthy was two centimeters, of the forearm and hand one centimeter. Movements of elevation were only possible when the child by movements of the body gave motion to the arm, like a pendulum. The upper arm is greatly atrophied, and that very evenly on the anterior and posterior surfaces. The elbow-joint, owing to the flaccid hanging arm, could not be moved. When the upper arm is elevated and fixed the patient is able to actively straighten the elbow when it has previously been passively bent, or if the patient has allowed it to fall by its own weight into a flexed position. If one fixes the upper arm, then rotates it firmly inward and elevates it to an angle of 45 degrees there is a possibility of weak active movements in the forearm. Pronation and supination of the forearm is slight, and only possible when the forearm is bent. The closing and stretching open of the hand, with finger movements, can be easily done. On the pectoralis major one notices fibrillar movement, particularly when one breathes or blows on that region. Sensation to pain, temperature and position is equal on both sides. No vasomotor disturbances exist. Eulenburg's electric examination shows a marked decrease of nervous (irritation) excitement (faradic) in the axillaries and less in the plexus over the clavicle; no decrease in the other nerves of the arm. Marked decrease of faradic

muscular irritation in the deltoid, less decreased in biceps, triceps and supinator longus and no reduction of muscular irritability in the forearm muscles; marked decrease of galvanic muscular irritability in the deltoid; no arterial reaction. *Operation:* The arm was abducted so that the posterior border of the glenoid cavity could be easily palpated, and an incision was then made six centimeters long, beginning at the posterior angle of the acromion, along the posterior border of the glenoid cavity downward. This incision laid the joint open. The humerus was then rotated inwardly more than was natural and so much of the muscular insertions at the greater tuberosity as was necessary to permit of this abnormal rotation was cut away. This permitted a good apposition of the head of the humerus with the glenoid cavity, and after obtaining this marks were made on the head of the humerus and overlying the glenoid cavity, as it was intended to knit the humerus to the glenoid cavity by means of ivory pins. A thin layer of cartilage was then chiseled off the head and cavity and a hole drilled in the head of the humerus from the inner to the outer side, and on the border of the middle and outer third. In boring of the scapula it was sought to have the hole one centimeter from posterior border, for fear the bone would break off if the drilling were too near the border. In order to do this it was necessary to make a horizontal incision from the middle of the vertical one through the fibers of the infraspinatus. After boring the holes it was found that the ivory point could not be forced through both holes, as they were not in a straight line, therefore a strong silver wire was passed through both holes and then twisted until the chiseled surfaces of bone were in close apposition. The fixation was so complete that it was not necessary to make another knitting. The author then extirpated a portion of the articular capsule and left as much as would be necessary for the joint and closed the capsule with catgut stitches. Both muscle incisions were then closed with buried catgut suture and the skin wound closed, with the exception of a small point for drainage. *Result, immediate:* Primary union. *Result, remote:* Better than could have been hoped for. Patient can now, by means of scapula, lift and depress arm, which formerly dangled lifeless, and can also slightly abduct and adduct it. Against all expectation, it has happened that a form of new joint has developed, but with very limited motion, which does however permit rotation inward and outward, and even makes it possible upward and downward, no firm union having taken place between head of humerus and glenoid cavity. Head of humerus fixed to scapula. The author had hoped to obtain an osseous fixation of the denuded head and cavity, but did not succeed. It is therefore fixed by silver wire and by the fibrous tissue attached to the openings of the bored holes to the cicatrix, and we have therefore a new jointing with limited motion. There is slight rotation. Patient can throw a ball up or to the ground; can walk with a stick; can brush his shoes with the right hand, and can also write with it. None of these movements could be made before the operation. No marked progress in movements at the elbow. After the operation marked contractions were induced in the deltoid muscle, which previous to it did not react at all. This was the condition four months after the operation

27. *Irreducible dislocation, old, complicated with persistent atrophy of the muscles or with muscles not responding to the electric test,* should not be operated for obvious reasons unless to relieve troublesome pressure symptoms.

28. *Irreducible dislocation, old, complicated with fatty or sclerotic degeneration of the muscles;* the same applies. It is recognized by the fact that when under an anesthetic, while the muscles of the opposite shoulder are completely relaxed, yet those of the affected side are still rigid and tense and call for section of the unyielding muscles. This sclerotic and fatty condition is not rare in cases of anchylosis of old irreducible dislocations of the shoulder specially and is often one of the most potent factors in preventing the reduction of the bone even after the head has been exsected.

29. *Irreducible dislocation, old, in subjects rheumatic or gouty;* the same applies also because they are apt to be followed by anchylosis, specially if reduction has been done; these subjects manufacture fibrous tissue too readily.

30. *Irreducible dislocation, old, complicated with diseases at large,* should be treated with the greatest care. Tripier's case is one in point.

31. *Irreducible dislocation, old, complicated from having been subjected to great efforts at reduction,* should not be operated for some two or three weeks lest we find bruised tissues, extravasated blood, etc., which may be the causes of suppuration and sepsis. Langenbeck, 1877, is one example; also Kocher's No. 3 and No. 6, 1889.

32. *Irreducible dislocation, old, complicated by arthritis acute,* should not be operated until the acute state is over.

33. *Irreducible dislocations, old, complicated with arthritis chronic* or with *suppuration,* are reported by Reid 1878, Bardeleben 1889, Fender 1889, Schede's No 2, 1892, Case 23, Bellamy 1887, Case 7. They should be operated as soon as possible.

34. *Irreducible dislocation, old, complicated with anchylosis of the head in the pseudo-cavity,* is mentioned by Post, 1861, and Hofmehl, 1881. They usually present great difficulties, specially if the anchylosis be fibrous and close, but particularly if it be osseous.

35. *Irreducible dislocation, old, complicated with pressure symptoms of the vessels and nerves* should be operated, if only for the relief to be obtained, provided no serious contraindications exist.

36 and 37. *Irreducible dislocation, old, complicated with fractures during attempt at reduction soon before or during the operation.* If the fracture is very high up it is safest treated by resection of the broken head; when the fracture is in the middle the head should be resected below the ball and the balance of the fragment brought in apposition with the lower fragment. Thiersch's case, 1874, is an example. We will recall here the following cases of old dislocations and new fractures of Kocher, 1889.[90] In case No. 2, one week before operating an attempt to reduce was made and the bone fractured through the anatomic neck; the greater tuberosity was torn off, also the subscapular, the short head of the biceps; the fractured head was resected or removed and the result was good. In case No. 4, attempt at reduction before operating was followed by fracture of the head of the humerus, the fracture line passing also through the greater tuberosity; resection of the head, result good. In case No. 5 there was an old united fracture of the head through anatomic neck and of the tuberosity; the bones were refractured in the manipulations

to try to reduce before operating; the fractured bones were removed, with an improvement of the case. The same accident, *i. e.*, refracture, happened to Edmann, 1896, and to Vander Veer, 1897.

38. *Irreducible dislocation, old, complicated with injury to the vessels before operating and followed by an operation* is represented by the clinical case of Lister, 1873, rupture of the axillary artery.

39. *Irreducible dislocation, old, complicated by injury to the vessels during operation* has been recorded in the case of Annandale, 1875 (circumflex and axillary arteries), Langenbeck No. 2, 1879 (subscapular artery), Hofwohl 1881, Volkmann 1882 (subclavian vein), Vander Veer, vein and artery—axillary. The injury to the vein rendering ligation necessary and followed by threatening gangrene, calls for deep consideration of the advisability of ligating the axillary or brachial artery below the largest collateral. Injury to both artery and vein or uncontrollable hemorrhage must be met as done by Vander Veer by amputation of shoulder.

40. *Irreducible dislocations, old, complicated with old fractures; non-united of the tuberosities*, call for the resection of those pieces which are usually connected by more or less numerous short, dense fibrous bands. Irreducible dislocation, old, complicated with old fractures united of the tuberosities, of the anatomic neck and of the surgical neck are common, 36 per cent. of all forward dislocations. They are usually osseous and surrounded by such a great amount of fibrous tissue or by such callus as to render the operation very difficult. The partial resection of the tuberosities is sometimes required to obtain room to work, as in the Bickham-Souchon case.

41. *Irreducible dislocations, old, complicated with old fracture united of the shaft*, are not likely to give trouble, being low down.

42. *Irreducible dislocations, old, complicated by a previous unsuccessful operation*, give great trouble, as proved by the case of Bickham and Souchon, where the adhesions between the surgical neck and surrounding parts were great and resistant; also between the cartilaginous surface of the head with the surrounding tissues; the head was much hypertrophied and had to be partially resected with the gouge and hammer to make room to continue the operation; it was also very hard, almost eburnated. All this, due to the long suppuration that followed the first attempt. Irreducible dislocations, old, recurrent or habitual are irreducible in that they can not be kept reduced.

43. *Irreducible dislocations, old, recurrent, treated by stitching of capsule (reefing)* are reported by Ricard, 1892, two cases.[109] [110] An anterior incision in the pectoro-deltoid interstice; at the upper end the incision is prolonged at right angle, following the contour of the insertion of the deltoid to the clavicle and acromion; the muscle is detached and turned outward and backward; the coraco-brachial is then lifted by an assistant, the operator frees the upper or inferior edge of the subscapular muscle at its humeral insertion; the arm is then rotated inward firmly, so that the anterior wall of the capsule is relieved of tension; then through the top of this wall, through this capsule and into the thickness of the subscapular muscle, the operator passes three stitches of coarse flat silk, vertically directed, and about two centimeters one from the other. The free extremities of these threads are tied two by two in order to reduce this anterior wall to the least but most resistant and rigid thickness. There were no difficulties nor complications during the operation nor after; the results immediate were not mentioned. The patient is reported as keeping well during the nine months following the operation, when he was employed wheeling a wheelbarrow. This surely is the ideal operation for habitual dislocations.

44. *Irreducible dislocation, old, recurrent treated by incision of capsule, overlapping and stitching*, is the first case of operation reported for recurrent dislocation, by Samosch, in 1889.[111] Through an anterior incision the capsule was reached and split longitudinally; the medial portion was drawn over the lateral and pulled strongly and stitched in this position. No difficulties of complications are mentioned; the healing was primary and the final result very good.

45. *Irreducible dislocations, old, recurrent, treated by resection of portion of the capsule, stitching.* Three cases were found, one by Gerster, 1884,[112] and two by Burrell in 1897.[113] [114] Gerster's is a case where reduction was effected without any difficulty, the arm put up in a plaster bandage for five weeks. Upon the removal of the bandage the dislocation reappeared and the mere weight of the extremity alone was sufficient to cause the reappearance of the dislocation. An anterior incision was made and the capsule exposed; its inner aspect, the side facing the axilla, was abnormally relaxed; a piece one inch long and two in width was excised from it while the arm was firmly rotated outward. A counter incision was made into the posterior part of the capsule for drainage, closing of the anterior incision. There was no difficulty nor complication during the operation. Septic fever set in a few hours after, due to the catgut drain; it was removed and replaced by a drainage tube; wound treated openly. There was long suppuration with erysipelas. After the healing the functions of the joint were fair and promised to improve.

Burrell proceeds also through an anterior incision; the operations were more elaborate and systematic; they presented no difficulties nor complications, healed primarily and gave very good results. The cut which accompanies his description shows the field of operation; it is a drawing from a dissection made to demonstrate this operation by Dr. F. B. Lund. The important detail, which is shown in the cut, is the divided tendon of insertion of the pectoralis major. This allows the retraction inward of this muscle, uncovering the capsule of the joint. In order to gain access to the joint the subscapularis muscle should be partially divided. Then with hooked retractors a piece of the capsule can be excised.

The following description gives in detail the operation:[79] The patient was etherized and the arm slightly abducted. An incision was made from the coracoid process downward and outward, following the line of the cephalic vein, to below the upper border of the tendon of the insertion of the pectoralis major. The cephalic vein was then recognized, drawn outward and the intermuscular septum between the deltoid and the pectoralis major was separated with the handle of the scalpel and with a few touches of the blade. This exposed in the upper part of the wound, the coracobrachialis and short head of the biceps, and in the lower angle of the wound the upper part of the insertion of the pectoralis major.[80] The acromio-thoracic artery was distinguished; the upper three-quarters of the insertion of the pectoralis major was divided in

order to allow the muscle to be retracted inward and thoroughly expose the head and neck of the bone. These now came into view, and in front of the head and neck of the bone, could be seen and felt, through its sheath, the long head of the biceps. It was found necessary to clear the tendon of the coraco-brachialis and short head of the biceps quite up to the coracoid process, and to carry the incision in its whole depth up to the coracoid process.[81] By externally rotating the arm and dropping it backward the insertion of the subscapularis muscle could be distinguished and its tendon was stretched over the head of the bone. A portion of this insertion was divided. The finger felt the head of the bone, the anterior two-thirds of which was very plainly exposed, and it tended to slip forward toward the coracoid process. The coracoid process could be plainly distinguished and the capsular ligament was apparently lengthened.[82] The arm was then abducted to an angle of 45 degrees and the head of the bone pressed backward to prevent the head from coming up under the coracoid process. By these means the front of the capsule was relaxed. The loose part of the front of the capsule was grasped with a three-pronged vulsellum forceps. Three sutures were inserted with a curved needle beneath this and this fold of the capsule was excised, three-quarters of an inch in length and five-eighths of an inch in width.[83] Two of the sutures were cut out at the time of removing the bit of the capsule. The other suture held and was tied. Another suture was introduced into the capsule. After these sutures were tightened and tied it was found that the capsule was distinctly tighter and shorter.[84] The acromio-thoracic artery was divided and was the only vessel requiring ligature. Sterile water was used for irrigation. Silk-worm gut sutures closed the whole length of the wound. No attempt was made to unite the partially divided insertions of the pectoralis major and of the subscapularis; as when the arm was brought to the side these structures came together without suturing. The wound was dried, an antiseptic dressing applied, and the arm was fixed to the side with the hand across the chest.[85] A clear differentiation must be made of all the anatomical structures, and with this accomplished, the operation is feasible. The use of broad retractors without sharp points, on the inner side of the wound to retract the coraco-brachialis and the vessels, is of great importance.[86] The important steps in the operation are, the free division of the tendinous insertion of the pectoralis major for three-quarters of its breadth, in order that the head of the bone and capsular ligament may be freely exposed by retracting the muscle; the division of a portion of the insertion of the subscapularis; raising the arm to a horizontal plane and pressing back the head of the bone, which relaxes the front of the capsule so that it can be grasped and a bit removed.[87]

The result of the operation in the first case is that a year and ten months after the operation the patient stated that there had been no recurrence of the dislocation; that he had been fishing on the Grand Banks during the summer of 1896, and that the motions of the joint were perfect. In the second case at the end of two months the patient is using the arm freely and has had no recurrence of the dislocation.[88]

The first operation took one and three-quarter hours. The second thirty-five minutes. It is purely an anatomical operation and each anatomical structure must be recognized as carefully as in the ligation of an artery. So far as one can generalize from these two operations, it is simple, efficient and curative.[89] This operation is a more severe one than mere stitching and should be reserved for when the stitching fails.

46. *Irreducible dislocation, old, and recurrent treated by reduction.*—There is one case reported by Albert, 1888.[115] It was of sixteen months standing. The joint was penetrated through a posterior incision. The head and glenoid cavity were deprived of their cartilage and stitched together. No complications followed the operation, but it resulted finally into anchylosis of the joint.

47. *Irreducible dislocations, old, recurrent, treated by resection of the head.*—Cases were reported by Cramer 1882,[116] Popke 1882,[117] Sacré 1883,[118] and Owen's No. 2, 1893,[119] Monks 1896.[120] They were all subcoracoid dislocations. The operation consisted in an anterior incision; Langenbeck acromio-humeral was used by Cramer. There were no difficulties or complications during the operation, nor any complications after. They all healed by first intention except Popke's case. The results, remote, were: fair in the case of Cramer and Owen, good in Sacré's and improved in Monk's. This operation appears as a rather severe one when contrasted with the result of Ricard. It is true in the latter's case there was no rent of the capsule; but when this exists it should be pared and stitched. Excision of the head of the humerus is a mutilating operation and will be very rarely necessary. It is conceivable that after an exploration of the joint, abnormalities might be found which would demand an excision.[90]

48. *Irreducible dislocation, old, operated by resection and reduction and followed by long suppuration,* has been met with in 32 per cent. of all forward dislocations. This is indeed too much and calls for the greatest care in asepsis and antisepsis in the future. The head had also to be resected after reduction in the case of Kocher No. 3, 1889, a case of forward dislocation operated through an axillary incision; also Socin's case, 1886, downward dislocation—reduction, necrotic pieces, then resection; also in Schede's case No. 3, 1892, backward dislocation—congenital reduction, necrosis of greater tuberosity. The same remarks apply here with much greater force. It shows also how considerate the surgeon should be before reducing instead of resecting.

49. *Irreducible dislocation, old, operated by resection or reduction and followed by necrosis of the bones,* is recorded in 2 per cent. of the resected cases, as against 16 per cent. of the cases reduced of forward dislocation.

50. *Irreducible dislocation, old, operated by reduction and followed by anchylosis of the head in the old glenoid cavity,* is one of the dangers inherent to reductions. In has been observed specially when the surfaces were tightly bound down and when the after-treatment had not been most carefully attended to from the beginning.

51. *Irreducible dislocations, old, operated successfully by reduction,* may be followed by recurrence and anchylosis in the pseudo-cavity.

52. *Irreducible dislocations, old, operated by resection and followed by anchylosis of the sectioned extremity of the humerus in or near the glenoid cavity,* have been observed, specially in the case of Kocher's No. 1, 1889, and of Bickham's and Souchon's, 1895. Cases requiring the resection of the superficial part of the head are apt to be followed by anchylosis.

For this reason it is best in adults to resect more extensively than is actually necessary to produce movement, but in young subjects, especially in children, the great importance of not injuring the epiphysial cartilage will render the opposite course the rule to be guided by. This anchylosis of the sectioned extremity may require either section of the muscles or resection of the anchylosed extremity. The latter is often a laborious undertaking, on account of the extensive and resistant adhesions, due to the fact that the parts have been operated upon before. The muscles are also retracted and degenerated in these cases. This condition is often due to improper consecutive or after-treatment, either because it was not begun soon enough or because it was not kept up long enough.

53. *Irreducible dislocation, old, operated by resection is followed by dislocation of the sectioned extremity of the humerus under or inside of the coracoid process*, sometimes forms a coraco-humeral articulation, instead of a glenoido-humeral, or under the clavicle. Ollier mentions a case where he had much trouble in preventing it. It is usually the result of improper attention to after-treatment at the proper time. In one case, Luckie's, the resected extremity articulated with the under surface of the acromion. (Ollier.) Such occurrences interfere very much with the movements and may destroy the results of the operation. There was an articular capsule between the humerus and the inferior surface of the acromion. This later was covered with fibrous tissue, the small humeral head which projected into the capsule is a small projection as large as a pea, which was lined with hyalin cartilage. Outside of the articulation osteophytic processes extended into the muscular insertions; the glenoid cavity was lined with fibrous tissue and connected with the humerus by bands of connective tissue.[91] The case was an old patient of Langenbeck (it is related in Luckie).

54. *Irreducible dislocation, old, operated by resection*, is sometimes followed by anchylosis of the sectioned extremity of the humerus under or inside of the coracoid process.

55. *Irreducible dislocation, old, operated and followed by anchylosis of the pseudo-joint, due to hypertrophy or irregularity of the new ossification*, is only seen in cases of subperiosteal resections. New resection may be attempted, but may not do much good, on account of the condition of the tissues of the region. If there is only one bony projection it should be excised. (Ollier.)

56. *Irreducible dislocation, old, operated and followed by dry arthritis of the pseudo-joint*, is observed specially after reduction, but also after resection, when the subperiosteal method has been followed and a new head has been formed. It should be treated on general principles, unless too painful, when a new resection has to be made, but extra-periosteally. After a few years they present modifications analogous to those of ordinary dry arthritis. The joint becomes stiff and cracks. This is especially observed in rheumatic and tuberculous subjects; in the latter caries may develop. (Ollier.)

57. *Irreducible dislocation, old, operated by resection and followed by a dangling arm*, is often the result of an extensive resection, or an unnatural condition of the muscles. Prothetic apparatuses place the arm in the same condition as if it was anchylosed. When the distance between the resected humerus and the glenoid cavity is only six or seven centimeters the extremity should be pared and stitched to the glenoid. When the distance is greater the same should be done and the bone stitched as high up as possible. Bone grafting may be very useful, especially fragmentary grafting. (Ollier.)

Remarks concerning the operations, specially by resection.—The following points from able authorities, but mostly from the admirable book of Ollier,[122] should be well borne in mind by operators, especially in operations by resection. They are transcribed here from a previous paper by the writer, on anchylosis of the shoulder.[123]

Lagrange states that Boucher was the first who thought of resecting the upper extremity of the humerus, but it was White of England and Vigarous in France who performed the first operation.[124] In 1789 a boy presented, with his right hand, to the Academy of Surgery the head of his right humerus, which had been resected by the surgeon-major of the regiment, du Barri.[125] But Ollier asserts that Bent of Newcastle, in 1771, is really the first who resected the humeral head.[126] Post of New York was the first to resect for irreducible dislocation; the next was Warren of Baltimore, says Ollier.[127] However, we report a case of Langenbeck dated 1858. Ollier was the first to recommend (1858) the preservation of the capsulo-periosteal sheath without cutting the muscles, as a means of obtaining a new joint, and if possible to cause the formation of a new head.

Langenbeck's incision, starting farther behind the internal border of the acromion, sacrifices the innervation of a greater portion of the deltoid.[128] Ollier's rule is to expose the head by an incision as near as possible to the antero-internal border of the deltoid and, if necessary, by the disinsertion of the internal portion.[129] The incision should never be made internally (in axilla) on account of the nerves and vessels, except in rare cases of subglenoid dislocation where the head projects beneath the skin.[130]

The deltoid is the most important of all the muscles, as is demonstrated by the cases of paralysis of the circumflex nerve, when the insufficiency of the muscles which are inserted on the head becomes evident. The preservation of the circumflex nerve is also of great importance.[131] This nerve runs parallel to the posterior border of the acromion, from which it is distant in an ordinary adult by five and a half or six centimeters. This is important for the limit of perpendicular incision and for the incision for the drainage tube behind.[132]

The loss of the elevating action of the deltoid must be accepted, like the loss of the rotating power from the divisions of the muscular insertions into the two tubercles, as a necessary consequence of resection of the head of the humerus. But the holding or supporting power of this muscle, exerted upon the whole of the upper extremity, owing to its position, its extensive origin and the manner in which it embraces and protects the mutilated parts as well as its faculty of carrying the arm backward and forward, are all functions which may still remain and serve to point to the great importance of preserving its integrity as fully as possible. The wasting of the internal fibers, however, seems a necessary result of resection by the single incision, but it has this compensating feature, that it is a less serious loss to the patient than an atrophied condition of the outer and posterior fibers would be, because the upper clavicular fibers of the great pectoral can take the place of the

inner deltoid fibers to a considerable extent in supporting the shoulder and drawing it forward to the chest.[133] The movements of elevation are seldom required save by those who follow climbing accupations, as sailors, masons, etc.

The mode of performing the operation as well as the operation itself will naturally influence these movements. If the deltoid be cut completely across by means of an elliptical incision, the power of abduction of the arm and its elevation may be permanently lost. If its fibers be merely split by a longitudinal incision they may be preserved or regained in great part.[134] The incision should be as far forward as possible, because all that portion of the muscle which will be to the inner side will be paralyzed. It is best to avoid the interdeltoido-pectoral groove on account of the cephalic vein; make the incision a little behind.[135] In exceptional cases the clavicular portion of the deltoid may be disinserted, *i. e.*, by section of the insertion near the bone without preserving the continuity with the periosteum. It is different from the subperiosteal detachment of the muscle done with the gouge. The disinsertion of the clavicular portion of the deltoid, in part or in totality, is especially indicated when the head of the humerus is bound down and the arm can not be separated from the chest.[136]

The relations of the large vessels and nerves must not be overlooked. However, in subperiosteo-capsular resections they run no risk as long as the operator remains within the capsulo-periosteal sheath.[137] A great effort should always be made to recognize the tendon of the biceps and take care of it. If torn or cut it must be stitched back. To obtain satisfactory results, especially in reductions, it is the posterior part of the capsule that the surgeon must get out of the way of the humerus, and of the cup. Therefore it is particularly behind the displaced head that he should dissect and not so much in front as has been done hitherto.[139]

As one of the chief defects of the operation is the poor amount of adduction and elevation which remains, owing, in a large measure, to the humerus being too short to be brought into the glenoid cavity when the deltoid acts, Holmes thinks that in this joint a trial of the subperiosteal method should be carefully made to insure as much reproduction of bone as possible.[138] The resection should be done economically. First saw through the anatomic neck (see Kocher, No. 3, 1889). If the reduction is not possible saw off a slice and then try to reduce; if necessary saw off another slice or saw through the surgical neck. When the humerus is put back in place it must be neither too loose, because there will result a flake limb, nor too tight, because it may become anchylosed partially or totally; this has often happened[140] and is worse than a loose joint.

Ollier says to be careful about the replacing of the extremity of the humerus because the fibrous tissue might form a sort of interarticular cartilage between the end of the humerus and the cup. It will be well to stitch together the fibrous tissues so as to form a sort of capsule.[141] It is impossible to say how much of the head must be resected to reduce the dislocation. Sometimes a superficial resection of the convexed articular surface is sufficient to replace the head, but it must be remembered that the head must be maintained in the cup. A resection below the head insures a better false joint. A too close resection may be followed by anchylosis.[142] Only the head of the humerus, without any of the shaft, should be removed. However, it is best to remove too much of the head than not enough. The subperiosteal is the best method; too much dissection of the bone may cause necrosis.[143] After the head has been resected, the cup should be cleared so as to be sure that the extremity of the humerus will readily remain in the cavity, otherwise that extremity itself may become displaced (or dislocated) under or inside of the coracoid process.[144] When feasible, the capsule should be restored as much as possible over the reduced head or over the resected extremity.

Ollier described several cases of reproduction of bone after the subperiosteal method.[145] Langenbeck mentions a case in which the whole shaft of the humerus was necrosed and was removed, the elbow joint was resected at the same time and yet the reproduction of bone was so complete that the shortening was no more than one and one-fifth inches. The new humerus broke several times, but the movements of the shoulder and elbow were satisfactory and the hand capable of the most delicate movements.[146]

In cases of rarefaction of the bones it is important to seize the head with strong tooth forceps or rotating forceps; ordinary forceps smash the head.[147] The posterior drainage incision must be made at the most dependent part when the patient is lying down; this depends upon where the resection has been made. Care should be taken not to wound the circumflex nerve nor the artery. When the incision is made very low down, it is the musculo-spiral nerve that must not be wounded.[148] It is best to place the tube even in cases where the bones are not diseased.[149] In adults the rule is to push the resected extremity into the glenoid cavity when regeneration of the bone is not expected.[121] A thick pad should be placed in the axilla to prevent the humerus from being drawn inward. The preservation of the deltoid roundness is a peculiarity of the subperiosteal resection.[151]

Remarks concerning the after-treatment. — The sooner the passive movements are begun the better, a few days after the operation, because the resected humerus may become anchylosed.[152] The more the wound healing progresses the more the movements should be extended.[153] The muscles, especially the deltoid, must be soon massaged and electrified. It is especially in operations on the shoulder that the after-treatment is of importance. Too much care can not be given to that after-treatment; if incomplete or stopped too soon, almost all the benefits of the operation may or will be lost.[154] It must be kept up for weeks and even months.[155]

Extensive movements, especially those of abduction, should not be practiced until several weeks after the humerus is sufficiently fixed in the glenoid cavity, but the resected humerus may pass under the coracoid process, where it may form a coracoid articulation instead of a glenoid.[156]

The re-establishment of the complete mobility is retarded by thickening of the capsule, which in some cases is shrunken and in some points is as resistant as cicatricial tissue; also to the adhesions of the tendons and muscles with the surrounding tissues, also to the fibrous and fatty degeneration of the muscles.[157] This condition of the muscles is all the more difficult to overcome because the other muscles instinctively take their place, especially those that move the scapula.[158] Rotatory movements must be begun as soon as there is no pain.[159] Electricity, massage, gymnastic exer-

cises must be conducted slowly, carefully, but continuously, every day.[160]

Remarks concerning the final results.—In a number of cases of resection of the head operated on by Percy (1795) for various causes, the movements were all good except that of elevation, and the arm had to be rested against the chest to work the forearm, which then enjoyed all its strength.[161]

In order to appreciate the usefulness of the new joint, the following maneuvers should be practiced: To measure the force of the abduction, *i. e.*, of the action of the deltoid, weights should be fastened to the elbow, and the patient directed to raise the elbow outward, first before and then after fixing the scapula. Then do the same with the weights attached to the forearm or placed in the hand.[162]

To measure the movements of rotation, flex the forearm against the anterior surface of the thorax, and place some article in the hand; then fix the elbow and make the hand describe the arc of a circle from within outward, keeping the elbow well fixed.[163] In doing this we must watch the actions of the other muscles inserted in the humerus, which by the successive contractions of their various parts may, at a given time, become rotators.[164] The patient should be made to cross the arms, to place the operated arm behind the head, on the forehead, behind the back, on the buttocks, throw a stone, etc.[165] Some patients may perform some energetic movements and yet feel hampered in delicate movements requiring rotation. The resistance of a fibrous band or the existence of an abnormal projection on the new head explains these discrepancies.[166]

As for the conditions of the new joint, after resection from various causes, out of 213 resections, Gurlt observed 96 tight articulations, 21 anchyloses and 76 dangling limbs.[167]

Remarks concerning the findings at the autopsies of operated cases.—In some cases there is formation of a new head more or less irregular.[168] These gave an almost ideal result. In one case Testor found an intra-articular cartilage.[169] Chaussier, Roux, Syme, Breess, Hutchinson and others have dissected articulations of shoulders resected, from three months to twenty years. They all found a fibrous cord, strong and resistant, joining the humerus to the scapula, and adherent by its external surface to the surrounding soft parts more or less atrophied. But they never found a real articulation.[170] Ollier reports several cases of reproduction of bone after operation, found at the autopsies.[171]

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OBSERVATIONS ON WHEN TO APPLY HEAT AND COLD IN EYE TREATMENT.

Read before the Wayne County Medical Society Nov. 4, 1897.

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It is an undisputed fact that what are generally considered the simple things in the treatment of diseased conditions, whether medical or surgical, may if overlooked or misapplied, become serious, and sometimes be the means of bringing about untoward results. With this idea in mind, I have jotted down a few suggestions on when to apply heat and cold in eye treatment; not that these thoughts are entirely original, but in the hope that they may serve to remind us of a simple though useful adjunct, to our other treatment of the conditions mentioned as they may appear before us from time to time.

When we consider the general arrangement of the different tissues of the eye and its coverings, we are not astonished at observing the marked impression made upon the temperature of the different parts of the eye by the application of heat or cold, and we quite readily realize that the effect produced bears a direct ratio to the length of time of the application. In addition, however, to the influence which these agents exert on the temperature of the several parts of the eye, they exercise a controlling influence upon the circulation, which is fully as important and necessary to be borne in mind. While it is an old rule, that the temperature of the application which is most agreeable to the patient indicates which should be used, yet this can not be relied on absolutely, as instanced in many cases of external inflammations, where in the early stage hot applications afford relief, yet if persisted in too long edematous effusion ensues and possibly ulceration of the cornea with a lengthening out of the attack.

Either the dry or moist form of application may be made use of, but it is conclusively shown that better results obtain from moist applications, either hot or cold, not the least advantage possessed by moisture over the dry application, being the fact that it aids in keeping the conjunctival sac free of the unhealthy secretions. Moist applications possess more intensity of action, as is shown by the fact that the temperature is reduced much more rapidly by moist than dry cold; while on the other hand moist heat penetrates deeper and is more varied in the degree of heat obtained.

Both heat and cold exert a favorable germicidal influence. Cold, of no greater degree than can be well borne by the eye, prevents the growth and development of germs, and we well know that heat destroys many bacteria, a hot corrosive sublimate solution being over five times as effectual as a cold one. Of the external applications water is most frequently used, the effect being modified remarkably by the different degrees of temperature and the manner in which it is applied. For toilet purposes, in the majority of cases, more comfort will be derived from warm applications to the eyes, and the addition of a small quantity of boric acid to the water will be greatly

appreciated. Immersing the face in cold water and opening the eyes, as practiced by some, is to be deprecated, as the human eye is not suited to such treatment.

We will now consider more particularly the therapeutic application of these remedial agents, in some of the diseased conditions we see in our daily treatment of the eye. First, we may state as a general proposition that cold causes constriction of the capillaries, thereby checking the amount of secretion and exudation, and in this way acts as a sedative, relieving the pain in the beginning of acute inflammatory conditions.

On the other hand, hot applications are more useful in the later stages, bringing about a more healthful condition of the tissues involved, and relieving pain by stimulating absorption of the exudate and dilating the capillaries, not only in this way modifying the engorgement, but conveying to the part the life-giving principle for its proper nourishment. Again, we find that the quantity of a drug absorbed and the rapidity with which absorption takes place is greatly increased by the previous application of moist heat. This fact is frequently made use of when using mydriatics. In some cases of iritis, where owing to synechiæ the drug seems to make very little impression on the pupil, if we bathe the eye for eight or ten minutes with water as hot as the patient can bear, we will find absorption take place rapidly and we will get the desired action of the drug.

While moist applications are preferable, there are some cases where dry heat is more applicable and satisfactory, such as scleritis and iritis, where there is apt to be little or no secretion except of tears by reflex irritation.

We will find cold applications more suitable in the following conditions, viz.:

In conjunctival hyperemia, which consists almost exclusively in congestion of the vessels, with slight papillary engorgement, a very moderate increase in the secretion and with no swelling of the membrane, whether it is of traumatic origin or caused by eye-strain, the application of the cold douche or bathing with cold water for a few minutes, will be very effectual in bringing about a healthy condition of the membrane, care being exercised in not using water too cold or the reaction may be too severe.

In acute purulent conjunctivitis, which, as its name indicates, is characterized by a distinctly purulent discharge, thus differing from catarrhal conjunctivitis, for as Dr. Wecker says, "let a catarrh be never so intense it will not give rise to true blennorrhea or purulence." We need vigorous treatment from the beginning and as an adjunct to other treatment, to assuage the initial swelling and pain we use ice cold applications, either by using bits of muslin dipped in iced water, changing them every minute so that the cold may exercise its beneficial influence; or in some cases, if the eye will bear it, small pieces of ice wrapped in muslin may be held on the eye. We need have no dread of untoward results from prolonged use as the rule, especially in the early stages of this form of disease, is continuous cold to the degree of toleration. These applications are to be continued day and night, ever being watchful of the cornea to see that it is not becoming involved, in which case the cold applications must cease and be succeeded by hot applications persistently, at least four times an hour for three or four hours, by which time usually the threatened destruction of the cornea will have been stopped, owing to the improved circulation and nutrition.

In ophthalmia neonatorum, cold applied in the same manner will be found just as useful and grateful to the little patient.

Cold applications are also sometimes useful in cases of phlyctenular conjunctivitis when, owing to the distressing photophobia, we can not get the patient to open the eyelids for the necessary remedies to be used, we drop a few drops of ice water on the eye, which penetrate between the lids and aid us in gently opening them.

Sometimes in penetrating traumatisms of the eye where injury has been done to the iris and the lens, causing plastic iritis and traumatic cataract; ice cold applications are useful for their germicidal action as well as for overcoming inflammatory reaction.

We will now mention a few conditions where hot applications are more suitable than cold:

First, in acute catarrhal conjunctivitis, which while it may present somewhat the same symptoms we found in hyperemia, yet we have here a characteristic stringy, tenacious, flocculent, mucous discharge, with possibly some small masses of pus in it, having a tendency to stick the lashes together. At the very beginning of this condition we frequently find lukewarm applications very comforting and useful, but the error must be avoided of keeping up the treatment too steadily, as is sometimes done by the laity, who frequently make use also of such appliances as potato scrapings, bread and milk poultices, raw oysters, tea leaves, rotten apples and other disgusting substances, causing edema of the lids and conjunctivæ, intensifying the hyperemia, and finally, in some cases, producing ulceration of the cornea. Such conditions are not rarely met with in the clinics of public institutions.

In edematous conjunctivitis, a condition in which the hyperemia is not marked, where there is little pain and not much discharge, but a considerable effusion of serum beneath the conjunctivæ of both the eye and lids, causing a very uncomfortable swelling, bathing with lukewarm water will prove beneficial.

In trachoma, at the beginning of the disease, hot water is not usually well borne. As soon, however, as vascularity of the cornea arises with threatened ulceration, hot applications are indicated to stay the progress of destruction and assist in its repair. Hot compresses are oft times useful in causing the disappearance of the pannus by the inflammatory reaction which they promote.

In the less severe cases of phlyctenular conjunctivitis, lukewarm water will be very comforting and beneficial, helping to overcome the eruptive exudate.

In all forms of keratitis, hot applications are to be used, never cold, except possibly in phlyctenular, when ice cold water may be made use of for the immediate purpose of overcoming the photophobia, as referred to when speaking of phlyctenular conjunctivitis. This is practically the only time we use cold applications in corneal diseases.

The applicability of heat in diseases of the cornea will be well understood if we remember the anatomic structure of this membrane, it being non-vascular and dependent upon the surrounding tissues for nutriment, it follows that inflammatory or diseased conditions necessarily stop the supply of nourishment and death and destruction of the cornea results, as is evidenced by the ulceration. In order, therefore, to hasten the repair of the tissue it is necessary to overcome this stasis, which is accomplished by applying hot water, or sometimes better by dry heat, by folding

a napkin and heating it by the fire or with a hot iron.

Phlyctenular keratitis is undoubtedly the form which furnishes the majority of cases of corneal disease, occurring as it does among children who are delicate, ill fed, overfed or scrofulous, and in this class of cases we also see the disastrous results of ignorant interference in treatment by poulticing with the several harmful and repugnant articles mentioned previously, instead of using the simpler and more beneficial hot water compress.

On account of its stimulating properties, the hot compress will be found especially useful in the treatment of ulcers that do not heal readily, hastening the process of repair, while a drop or two of scalding water applied to a fungoid ulcer gives good results.

In suppurative choroiditis we find that hot applications are not only appreciated by the patient but are very beneficial, especially in mild cases.

Hot applications are often very grateful in muscular asthenopia, allaying the pain, and by stimulating the weaker muscle, removing the troublesome symptoms.

In a general way we may say the rule in all the milder cases, is intermittent use of the local applications of both heat and cold, from ten to thirty minutes at a time, and from three to ten times in the twenty-four hours, the continuous use of the applications being indicated only in the severer forms or in special cases.

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A CASE OF TACHYCARDIA.

Reported at meeting of the Toledo Medical Club.

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Mrs. ——, aged 40, has many times during the last ten years told me about attacks of palpitation which she has had and which have come on suddenly, lasted from a few seconds to ten minutes and then as suddenly stopped. Many times I have been sent for when she had been having the attacks, but the heart would have quieted before I reached her. After an attack had passed off she would be weak and exhausted for a few hours, and then be in her usual health, which in appearance was a little below normal. I could never discover any organic trouble of the heart, nor of any other organ.

Occasionally she would have attacks of urticaria, and 0.13 gram of quinia would produce intense redness all over her body. As often as every three months she had attacks of bronchial irritation, coughing almost incessantly for an hour at a time, and raising great quantities of thick stringy mucus, these attacks lasting for about a week. The bowels are usually very loose, often moving four times a day for weeks at a time. The urine is usually scanty and high colored and causes much irritation.

I was called to see her and found her sitting in a chair, pale, breathing hard and absolutely pulseless. Every few minutes she had attacks of blindness. She said she felt as if falling or floating through the air. The heart was beating much faster than I could count and, if such a thing is possible, I believe it was beating three hundred times a minute. There was this peculiar thing about the heart sounds, that while it was beating so rapidly both the first and second sound could be distinctly heard; not that both would be heard in any one beat, but by taking the attention from the first sound the second could be heard. The heart had been beating that way for two hours.

I gave her morphia and atropia. The woman was not excited, but was in great distress. Extremities were pulseless and cold. He feet were put into hot mustard water and I watched the effect of the hypodermics. Before I could tell what effect the morphia was having I decided to give her strychnia, and in about ten minutes it seemed that the heart was beating a little slower, and I gave her 0.0003 gram of nitroglycerin. Soon afterward she began to feel better and in two hours, as near as I could count, the heart was beating two hundred to the minute. About four hours afterward the heart began to intermit; the pupils became widely dilated; respiration was hurried; cold sweat all over the body; she could not see at all; complained of a sensation of sinking and I thought she was dying.

I gave her, in rapid succession, nitroglycerin and strychnia and she soon rallied and the pulse became regular and slow enough so that one could give a reasonable guess as to how fast it was beating, not less than two hundred. She was kept upon full doses of strychnia. About 6 P.M. she began vomiting and continued to vomit, at short intervals, until next morning.

The pulse remained at two hundred until 8 P.M., having been at the rate of two hundred and upward for twelve hours; after that time it became slower and the following day when the patient was quiet in bed, was 84.

There is a history of some special trouble when a child, of intense frequent headache for many years afterward, until she was fitted with lenses, since which time her headaches have recurred at long intervals only.

Riding upon steam cars had always caused dizziness. Turning over in bed often causes the same sensation; looking at moving objects, like the crowds upon the street, will do the same thing. Going up stairs has, for years, brought on palpitation. In summer walking out of doors makes her feel better, but in cold weather the palpitation with a feeling of suffocation comes on as soon as she goes into the cold air.

Her father, who is about 75 years old, has attacks of palpitation and a sister died of heart trouble at the age of 30.

This case suggests many conditions as the probable cause of the trouble. I have thought of eye strain, disease of the internal ear, aneurysm or pressure of something else upon the sympathetic, by which the nerve has been irritated or else by which inhibition has been cut off. I have looked for digestive disturbances that could possibly cause the trouble reflexly. Dr. Collamore called my attention to a mitral regurgitation which I think is not always noticeable. The heart is hypertrophied.

The attack referred to above occurred five weeks ago, since that time she has taken, as seemed required, strychnia, digitalis or strophanthus, principally the latter, and effervescent carbonate of lithia. For two weeks she remained in bed, then began sitting in a chair, and against advice, went down stairs. Tuesday, two days after, she did net feel so well. Wednesday her heart was beating two hundred per minute. In the evening she became nauseated and vomited all night. The entire body, as well as the bed, could be seen to vibrate with the action of the heart. I could not tell whether the rapid action of the heart caused the vomiting or the nausea induced the rapid action of the heart, or whether there was any connection

between them. I believe that the best treatment is rest in bed. Strophanthus seems to control the heart better than digitalis. Sleeplessness is troublesome. When her heart is troubling her she has insatiable thirst, the extremities are cold and sweat profusely. At such times, every few minutes, a sensation of tightness starts from the stomach and passes rapidly to the head, when she feels as if a violent stream of hot water had struck the top of her head. This sensation passes rapidly down over the body to the stomach and arms to the finger tips. Some authors say that tachycardia resembles epilepsy.

The patient's skin is always very pale, though her lips have a good color. The urine is loaded with urates, which prove to be principally soda and ammonium. I could find no casts.

NOTE.—The patient has since died in a condition of general anasarca.

DISCUSSION.

Dr. COLLAMORE thought medicines were likely to do no good.

Dr. FABER said that at the Hospital for the Insane he had frequently seen cases of rapid heart due to hysteria, and was inclined to that diagnosis. He argued that absence of fear as to results on the part of the patient, the aura described in the report and the general condition of the patient indicated that trouble.

Dr. LANDMAN had found far-sighted astigmatism, no hyperemia or anemia of cornea. Thought that dilated pupils pointed to pressure upon the third nerve and suggested that from some obscure cause there might be pressure upon the medulla.

Dr. TRACY said that he had wondered if it could be that at times there was an increase in cerebro-spinal fluid, which pressed upon the sympathetic. He had thought of intestinal toxemia as a possible cause. There are passed in the urine in twenty-four hours an average of 800 grains of solids, which for a woman of her size is not abnormal.

PRACTICAL URETHROSCOPY WITH THE EXHIBITION OF A NEW INSTRUMENT.

Read before the Mississippi Valley Medical Association at Louisville, Ky., Oct. 5, 1897.

BY EUGENE CARSON HAY, M.D.

President Garland County Medical Society; Member Arkansas Medical Society, American Medical Association, Mississippi Valley Medical Association; Fellow of the American Academy of Medicine.

HOT SPRINGS, ARK.

Urethroscopy has been practiced, by a few of our profession, since the first attempt to inspect the urethra was made by Bozzini of Frankfort at the beginning of this century, but it was not placed on a truly scientific basis until Desormeaux invented his instrument in 1853, and named it the endoscope. It was far from perfect, and since then many different varieties have been invented, some with the light reflected from without, and others with it placed within the tube.

It is not my object to discuss the merits of all these different instruments. I will briefly mention two, but at best they are all far from satisfactory in the hands of most of us, and this is the true reason I believe why the endoscope has not been more generally adopted by the profession as a method of examination and treatment of all chronic urethral troubles.

The Otis instrument, using the Klotz tube with a small electric light incased in a diminutive condenser, and this attached by a foot to the proximal end of the tube, is the one generally recommended by authors. This instrument has not proved satisfactory in my hands, and of recent years I have used nothing but an ordinary head mirror with reflected light; but the illumination secured was not always sufficient, and from this or my lack of expertness in manipulation, I was not able to obtain a uniform intensity of light until I adopted my present method.

Dr. Wassidlo of Berlin, in an article entitled "Practical Urethroscopy," published in the *Medical Record*, Sept. 7, 1895, gives a full description of the "Nitze-Oberlaender" urethroscope. But this is a very complicated affair aside from being an expensive instrument, which limits its use and general utility. I will give but a casual description of this instrument, and refer you to "Sajous' Annual of Universal Medical Sciences," 1896, Vol. 3, section E, page 18, where will be found a full description of the instrument and an abstract of Dr. Wassidlo's paper. In the "Nitze-Oberlaender" instrument, the light is applied within the tube by a platinum wire rendered incandescent by a galvanic current, and this is kept cool, to prevent burning the urethra, by a tunneled bar beneath, through which cold water circulates.

There seems several objections to this ingenious apparatus: 1. The tunnel through which the water circulates must be almost a capillary tube and I should think would become very easily clogged, and should such an accident occur while operating the result would be quite a severe burning of the urethral mucous surface. 2. I can not see how applications of nitrate of silver or any other liquid can be easily applied to the urethra without materially reducing or extinguishing the light; the same would result when operating through the tube if hemorrhage was produced. 3. The light carrier, lying in the bottom of the tube, must occupy some space, and when examining or operating through such a small aperture one wants a clear field and all the space is valuable.

Ocular examination of the urethra, in addition to the other methods now in use, is the only accurate manner by which we can arrive at a positive diagnosis in all old urethral troubles. Even after the microscope had been called to our assistance, I do not consider any examination complete until the urethroscope has been used. The endoscope is equally as indispensable to the genito-urinary surgeon as the ophthalmoscope and laryngoscope are to the eye and throat specialist.

An instrument that will simplify the procedure, is simple and easy to manipulate, always ready for use, not easy to get out of repair and illuminates the urethra perfectly, will commend itself to all, and cause endoscopy to be more universally adopted by the profession, as a most valuable accessory in the examination and treatment of that class of genito-urinary diseases to which it is adapted.

Last spring, while experimenting with an ordinary Mackenzie condenser with head mirror attached, which I used on a student lamp, I discovered that by placing the lamp by the side of my operating table, close to the patient's thigh, then inserting the endoscope and adjusting the mirror to properly focus the reflected light into the tube, that by placing my head behind (but close to) the mirror and looking through the small orifice in the center, with the left eye, keeping both eyes open as one does (or should do) in the use of the microscope, I secured a most excellent

illumination of the urethra; by far better than I had ever been able to obtain when the mirror was attached to my head. I also discovered that it greatly simplified the work, for when I turned to pick up an applicator to sponge the mucous membrane or make a topical application, I rarely lost my focus, and when I did, it required but an instant to secure it again. This led me to devise the instrument I present here.

The method of procedure in manipulating my apparatus is as follows: After placing the patient in proper position on your operating table or chair, the lamp stand is set close to the corner of the operating table and then the lamp is adjusted to a proper elevation and secured by a thumbscrew. The thumbscrews are then loosened for the transverse adjustment and the lamp is placed immediately over or close to the patient's left thigh. The endoscope is then

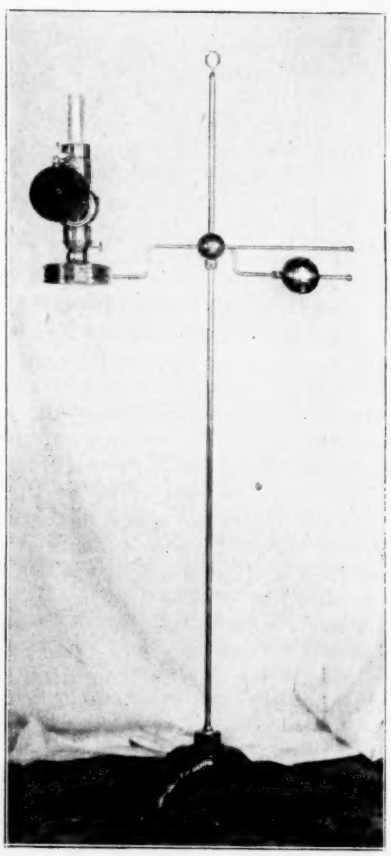

FIG. 1.—Front view of urethral illuminator.

inserted and the operator takes his seat between the patient's thighs before withdrawing the obturator from the tube. The obturator is then withdrawn and the mirror focused to properly throw the reflected light into the tube as previously described, the operator looking from behind the mirror, through the small circular orifice in the center. The endoscopes I use are thin metal tubes, Otis pattern, and I prefer them to Klotz's. I always use as large size as possible, as recommended by Oberlaender and Kollmann, as they state "that the lining membrane being longitudinally folded, it is desirable that these folds be smoothed out during examination, and this requires large-sized tubes. The only difficulty in introducing large tubes may be experienced at the external orifice or at the valve of Guerin, which, when present, is situated at the end of the fossa navicularis." In the cavernous and bulbous portion the urethra is relatively wide and in most cases will accommodate as high as No. 30 to 32, French scale, but a tube No. 28 French is the size that I most generally use. I use a plain straight tube, five inches long, for examining both the anterior and posterior urethra, and with the illumination I secure, do not find it necessary to use the three-inch tubes, as recommended by Dr. Klotz, for work in the anterior urethra. Since using Dr. Oberlaender's jointed obturator for introducing a straight tube into the deep urethra (making it assume the form of a Mercier catheter) I find it renders it a much simpler operation and materially reduces the pain for the patient.

When examining the anterior urethra with my instrument, I place the patient in a semi-recumbent

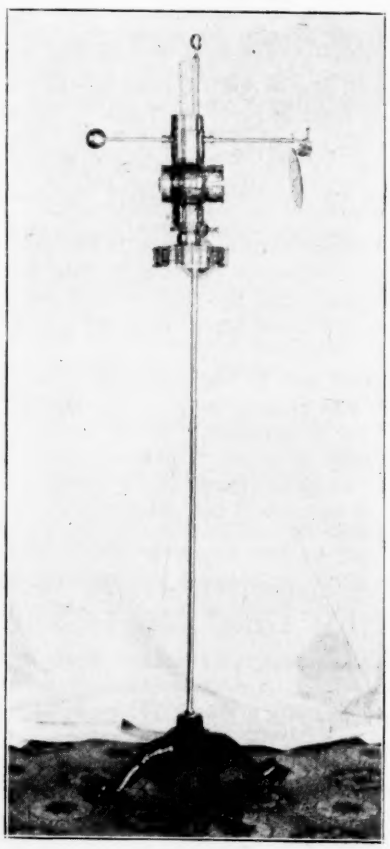

FIG. 2.—Side view of urethral illuminator.

position, in fact almost sitting upright, knees flexed, and draw the nates as near the end of table as possible.

When examining the deep urethra the position is the same, with the exception of having the patient lie perfectly prone. I then insert the endoscope and when withdrawing it bring the tube out parallel with the patient's thighs instead of following the arc of the natural urethral curve, as instructed by authors; and I have never found it any more painful. To pass a straight tube into the deep urethra and retain it there, is a painful operation unless the urethra is thoroughly anesthetized, and when this is done the cocain produces such profound anemia of the mucous membrane that your pathologic picture is materially changed.

In conclusion, the advantages I claim for this instrument are simplicity, ease of manipulation,

excellent illumination of the urethra and general utility for the general practitioner, because it can be used to illuminate the nose, throat, ear, rectum or vagina, and it is a superior apparatus for use with the Kelly's proctoscope and sigmoidoscope or for catheterizing the female ureters, Kelly's method.

In large cities where the electric current can be secured during the day, an electric light or gas can be used, having the apparatus supported by an universal bracket and attached to the wall, which would dispense with the uncleanliness of oil and make the instrument much lighter.

I do not claim any originality in devising this instrument except this particular method of applying the light and illuminating the urethra.

EPILEPSY AND ERYSIPELAS.

BY ROBERT HESSLER, A.M., M.D.

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INDIANAPOLIS, IND.

"The disease known as epilepsy is probably the most disheartening condition as to treatment that the physician has to deal with, since it often resists the influences of all standard remedies, and drives the practitioner from drug to drug in the hope of finding one which will be at least alleviating in its effects."—(Hare, "Practical Therapeutics," p. 496.)

Soon after beginning service in the Northern Indiana Hospital for Insane, in the summer of 1894, I began to make a careful, systematic study of the male epileptics with a view of ameliorating their condition as much as possible. Among the 300 males in the hospital there are always present from 30 to 35 epileptics, changes being comparatively few. All are well marked cases and exhibiting every grade of mental decay. Simple cases with few convulsions and without decided mental change are not admitted to the hospital.

Syphilitic, toxic and apoplectic convulsion cases are not included in this paper; cases accounted for are what may be called, for convenience, "idiopathic epileptics."

A careful clinical record was kept of all cases. Among the remedies tried were potassium bromid, sodium bromid, strontium bromid, opium, acetanilid, solanum carolinense and sodium salicylate. Some of these were used for weeks and others for months at a time. The results obtained were not of a kind to encourage one's belief in the efficacy of medication.

Potassium bromid must be placed at the head of the list. In suitable doses it has a beneficial influence in many cases; some are little affected by it, while in others the convulsions are controlled for a time only and then they recur with increased frequency, and in the course of a few days make up the usual monthly average. Its congener, sodium bromid, does not differ materially from it. Strontium bromid is less apt to bring on an irritable or even maniacal state of mind, a condition noticed at times, in certain cases, with potassium bromid. The largest continued amount given per day was 7.8 grams.

Opium, with and without potassium bromid, was tried in several cases; the results were not very marked. Solanum Carolinense, in various sized doses, was tried in three cases and after several months discontinued; it has little or no influence on convulsions in chronic cases. One epileptic dement became very active and maniacal under its influence but subsided promptly on returning to potassium bromid. Acetanilid was tried, and in one case 0.32 gram was given after each meal for a number of months without any results whatever. Sodium salicylate was given to three cases for several months, beginning with 0.97 gram after meals and increasing to 1.3 grams, no effects noticed. Salicylates are reported to aggravate convulsions, but certainly did not do so in my cases.

After keeping up my observations for a year without noting marked beneficial results from any form of treatment, I finally adopted a routine treatment for all chronic cases that bear bromids well, 3.9 to 7.8 grams of potassium bromid being given every day for a week or two, alternating with a solution of sodium chlorid for the same length of time. Many epileptics are constantly asking for medicine and live in hope while getting it, their faith in medication being unbounded. Laxatives were given whenever indicated.

While these observations were going on, one case had a singular termination. An epileptic aged 46, who had from forty-five to seventy convulsions per month, under any and all kinds of treatment, was attacked by erysipelas, toward the close of 1894, involving the face and neck. The temperature went up to 104, with delirium at the crisis. The disease ran the usual course and the patient recovered promptly. After this the convulsions practically ceased. The very few that occurred thereafter were light, *petit mal*. There was no mental disturbance as formerly, and the patient believed that he was well, and no longer was in dread of an oncoming convulsion.

During the year 1895 I often pondered on this remarkable change and at times even wished for more erysipelas among the epileptics. To inoculate the disease was, of course, out of the question; the frequently fatal termination of erysipelas forbade such a procedure. Then this thought occurred: Will the toxic products developed by the growth, by the artificial culture, of the streptococcus pyogenes (S. erysipelatus) produce a similar result when injected hypodermically? After much hesitancy I proposed a test to the medical superintendent and he readily agreed to a trial. A preparation of erysipelas antitoxin was obtained and used with gratifying results.

The patient receiving the preparation, or remedy, was a chronic epileptic, a hopeless case in the light of all previous medication, considerably demented, simple and childish, age 25, weight about 140, always tractable and never violent. Convulsion varied from one to four a day in number, or from twenty-four to fifty-two per month, under any and all kinds of treatment. Recently he had an attack of status epilepticus. Observations on the pulse, temperature and respiration were made for two weeks prior to treatment and then a preliminary hypodermic injection of normal salt solution was given, merely to see how he would bear hypodermics. March 19, 1896, the first dose of the antitoxin, or toxin, was given 3 c.c. in the arm. No local or systemic disturbance followed and two days later 5 c.c. more was given. No reaction was noticed and the dose was gradually increased, at intervals of a few days, up to 10 c.c. After about 45 c.c., or two ounces, had been given a marked diminution in the number of convulsions occurred and *petit mal* at times took the place of the customary *grand mal*, something not seen before, and the patient said that he could feel the attacks coming on and "could fight them off" at times. The longest period without convulsions was twenty days. The mental condition

improved, and the patient became brighter, more active and very hopeful. The injections were almost painless. No other treatment was given during this time and bromids had been discontinued some time before.

The following table shows the number of convulsions, the amount of toxin given, and dates:

	C.c. toxin injected.	Convulsions per month.
Previous to March, 1896, an average of about		45
March, from the 19th to 23d	18	
April, from 2d to 8th	27	
April		8[1]
May	0	
May		3
June, one dose on the 15th	8	
June		2
July, 8 c.c. on the 15th; 9 c.c. on the 23d	17	
July		8
No toxin after July 23.		
August	0	16
September	0	26[2]
October	0	28
November	0	33
December	0	53

Patient put on potassium bromid from December on.

The remarkable result obtained induced me, in April 1896, to try this remedy in other cases, but, only a very small quantity of the antitoxin could be obtained. The only use for this agent, it seems, had been in the experimental treatment of malignant tumors and cancers, and the supply on the market was very limited. After considerable delay a specially prepared supply was obtained and given to several patients, these being all considerably demented, and with an extremely unfavorable prognosis, in fact they were to be regarded as hopeless cases when viewed in the light of all previous attempts toward relief. The preparation used was the clear serum of a sheep which had been previously injected with a virulent culture of the erysipelas streptococcus, the method of preparation being that of Emmerich and Scholl. In this paper I have used the terms antitoxin and toxin synonomously; I do not know which should properly have the preference.

The next, or second patient to receive the injections was a man, almost six feet high and weighing about 180 pounds, age 36, who has had epilepsy for the past ten years; is deteriorating rapidly. Convulsions, all severe, varied from twenty-five to fifty-four per month while under my observation and were steadily increasing in number, even under large continued doses of potassium bromid. Injections were begun toward the middle of April 1896, and continued with intervals of a few days. I can not give the exact figures in this case, because my clinical chart for the month of May is missing. Convulsions continued with exasperating regularity and frequency for the next two months and then a decided change took place. The attacks became mild in character, and in July, a marked diminution in number took place; he would now miss an occasional day. After July 17, no toxin was given and soon thereafter the convulsions returned with their usual frequency and severity. He had thirty-five convulsions, mostly *petit* during July, and thirty-one during August. The number increased to fifty in September, and to sixty-eight in October and he was again placed on potassium bromid. The condition of the patient now was essentially as at the time prior to this treatment.

A man aged 20, in excellent bodily condition, has had epilepsy for the past five or six years, gradually growing worse, maniacal at times. This patient also improved, that is, the convulsions diminished in number and severity while under the influence of the remedy. After it was discontinued he gradually returned to his former condition.

A man aged 28, in fair physical condition, has had epilepsy for seven years, slightly disturbed at times, usually quiet and sensible, reported to have had from one to four convulsions per day while at home. He was greatly benefited by a course of bromids, but the convulsions would promptly return, and with increased frequency, on withholding the remedy for a week or so.

This patient had heard of the good results obtained with the new medicine and was very anxious to be given a trial. The remarkable inhibitory effects of the toxin were again shown in this case, in fact the patient improved so much that he went home on furlough and was ultimately discharged from the hospital; I do not know his history thereafter. The only incident out of the usual in the whole series of injections occurred in this case. While giving a large injection the lump raised by the fluid beneath the skin of the left arm suddenly disappeared and at the same time a general erythema, or reddening of the whole body appeared and he said he felt "queer" for a few moments. Evidently the toxin had suddenly found its way into the general circulation and brought on this disturbance; the effects passed off in a few minutes.

My experiments at the time were limited on account of the difficulty of obtaining a proper and sufficient supply of toxin and because it was an expensive remedy. All injections were made under strict aseptic precautions; the syringe was always washed out with boiling hot water before use and all air was excluded in filling it. There was not a trace of inflammation at the site of any of the numerous injections. The pulse, temperature and respiration at no time showed any variation from the normal, that is, a normal epileptic. A careful clinical record was kept. All of these patients were under close and constant observation by the attendants. No evil results followed the injections, and the beneficial effects are certainly remarkable. It should be borne in mind that my cases were all well advanced epileptics, and perhaps excepting the last one mentioned, not amenable to the ordinary methods of treatment; the usual remedies, like the bromids, had little influence on them. In my opinion, the old observation that all new methods of treatment have a temporary beneficial effect does not apply in the cases reported here, because decided results appeared only after repeated injections had been made, after the body had been saturated. Moreover, the time element is too great; such effects, due to mental influences, do not usually extend over a a period of a few days, and in the case of chronic epileptics are scarcely noticeable. I have no doubts whatever concerning the beneficial effects resulting from the attack of erysipelas in the first case mentioned, and the results obtained by the method given are certainly very gratifying. No positive conclusions can be drawn from so few cases; observations must be repeatedly verified. The remedy may possibly be of still greater utility in recent or acute cases,

[1] Several of this number being attacks of *petit mal*, heretofore all had been *grand mal*.

[2] In addition to these *grand mal* attacks, many *petit* appeared during September, October and November, but practically ceased by December; the convulsions from this on being of the former *grand mal* type, the modifying effects of the toxin having disappeared completely.

cases in which the epileptic habit is not fixed. My cases offered the least hope for a recovery on account of their long duration.

The pathology of epilepsy, especially when not traumatic, is very obscure, and so little is known of the products developed in the animal body by the growth of the erysipelas germ, that the subject of the relationship between epilepsy and erysipelas naturally becomes complex, and all facts and details must be worked out experimentally.

Recently, while in the library of the Surgeon-General of the United States Army at Washington, I was greatly surprised to find that there was no literature on the treatment of epilepsy by erysipelas antitoxin, and this fact leads me to publish these notes, though so long a time has elapsed since the observations were made.

Serum, toxin and antitoxin therapy is still in its infancy, and no one, it seems to me, can deny the efficacy if not as a cure, at least as a palliative measure of such a method of treatment, without first giving it a thorough trial. The results obtained so far, as given above, certainly justify a more extended application of this method of treatment for one of the most intractable of diseases.

SEROUS INFLAMMATION.

Read before the Milwaukee Medical Society, Nov. 9, 1897.

BY W. H. WASHBURN, M.D.

Professor of Principles and Practice of Medicine and of Clinical Medicine in the Wisconsin College of Physicians and Surgeons; Physician to the Presbyterian and Johnston Emergency Hospitals, etc.

MILWAUKEE, WIS.

According to the biologic theory inflammation, in its ultimate analysis, "is the reaction of phagocytes against a harmful agent." This theory, which Metchnikoff has done much to establish on a scientific basis, bids fair to be universally adopted by scientists within the next few years. Wherever there is phagocytosis there is inflammation and without phagocytosis there is no inflammation. In its most typical form inflammation presents well recognized features—redness, heat, pain and swelling, but viewed from our present standpoint, none of these features are essential or necessary parts of the inflammatory process. They are merely more or less frequent accompaniments of the essential feature, the reaction of the phagocytes, either local or mobile, or vascular, against some irritant. That inflammation may exist in the absence of preternatural heat is proven by the occurrence of the process in the cold-blooded animals; that it may exist in the absence of redness and swelling is proven by its occurrence in such invertebrates as are destitute of vascular system, and that it may be present and not occasion pain is indicated by its occurrence in animals that are devoid of a nervous system, as the spongiæ and acalyphæ (the medusæ, hydrozoa, etc.).

In all inflammation, then, the essential and necessary thing is the reaction of the phagocytes against an irritant, generally chemic in character. In proportion to the virulence of the irritant and its amount will the inflammatory reaction be active or otherwise, but when the irritant is of overwhelming virulence no reaction on the part of the phagocytes may be possible and death from general sepsis rapidly ensues, as in the case of experimental inoculation of guinea pigs with the vibrio Metchnikowii, of rabbits with the cocco-bacillus of hog cholera, or when rabbits are inoculated with microbes of very malignant chicken cholera. Here death ensues within a few hours without any phagocytic reaction and therefore without inflammation.

Some of the best known authorities on pathology have opposed the biologic theory of inflammation very vigorously, and many have found in serous inflammations a stumbling block to the acceptance of the theory. It is the purpose of this paper to attempt to show that serous inflammation is a process differing only in minor respects from the best known and typical inflammation, such as is seen in the development of a phlegmon and which process is attended by the accumulation of pus in an abscess cavity.

I speak now of the inflammations of the serous membranes, in which the exudate is serum with a very few cells, and not of what might technically be regarded as a purely serous inflammation such as show an entire absence of cells, if such ever does exist.

The irritant whose presence in the tissues occasions the phagocytic reaction which constitutes inflammation, may be of any grade of virulence, from the mildest to the most severe and rapidly fatal, and accordingly, we encounter the inflammatory process in all grades of severity, from that painless variety which results in the repair of trivial wounds to most virulent peritonitis due to septic infection. The inflammation-producing irritant, chemic in nature, may be of either organic or inorganic origin, that of organic commonly giving rise to the most violent phagocytic reaction.

In cases in which the irritant is of inorganic origin and a definite and moderate amount of the irritant is introduced into the tissues, the same is rapidly taken up, destroyed, carried away and eliminated by the phagocytes, or becomes encysted, the local disturbance subsides and we say that the inflammatory process has terminated by resolution. The same termination is also frequently observed where the irritant is certainly of organic origin, as in the resolution of inflamed lymphatic glands occurring in the course of scarlatina or diphtheria. I call your attention to one more common accompaniment of the process under consideration, the swelling.

In the most primitive form of inflammation the mobile tissue cells alone take part in the process. When the process is more complete the endothelial cells of the blood vessels react, contracting in such a manner as to allow of diapedesis, and at the same time permitting the escape of the fluid portion of the blood into the adjacent tissues. The swelling, therefore, in typical acute phlegmon is due in part to the escape of the blood serum and cells into the tissues and lymph spaces in the parts immediately adjacent to the localized irritant.

It frequently happens that the swelling extends to a considerable distance beyond the localized seat of the irritant. For example, a case recently under treatment presented a localized infection at the inner border of the nail of the great toe with active inflammation in the parts immediately adjacent. The dorsum of the foot was considerably reddened, painful and swollen, so much so as to suggest the existence of erysipelas. Beyond this and up the ankle, two or three inches above the inner malleolus, the parts were increased in size and pitted on pressure—inflammatory edema—the whole disturbance rapidly subsiding on incising and disinfecting the original site of the process.

Edema results from one of two things, there is either an increased transudation of blood serum into the subcutaneous lymph spaces, or, the transudation remaining the same, there is a lessened rapidity of absorption. It is more or less probable that in the case of inflammatory edema we may have a combination of the two.

The blood vessels being rendered abnormally pervious by the inflammatory process, there will, of necessity, occur an increased outflow into the lymph spaces, and in the case of inflammation of serous membranes the outflow will take place into the serous sac, itself an immense lymph space. In the ordinary course of events effusions into serous cavities are absorbed, in part by the lymphatics, and in part by the blood capillaries. That fluids are thus absorbed from serous cavities by the capillaries has been shown fairly conclusively by Orlow and Heidenhain, and facts tending in the same direction have been demonstrated experimentally by Kellgren and Colombo, whose work is quoted in the "American Year Book of Medicine and Surgery," for 1897.

In cases of serous inflammation, therefore, even supposing that the outflow of fluid is little if any increased there will be, in consequence of the condition of the blood vessels, lessened absorption and as a result accumulation of fluid in the serous sac.

The serous membranes, in general, are so situated as to be comparatively inaccessible to the ordinary inflammation-producing irritants. Inflammations of serous membranes are nearly always secondary affections, except when caused by traumatism. They are secondary to such diseases as tuberculosis, bronchitis, pneumonia, cancer, rheumatism, Bright's disease and gonorrhea.

Bacteriologic studies of pleuritic serum have shown the presence of various microbes, among others the tubercle bacillus, staphylococci, Eberth's bacillus, and various cocci of unknown species, but in the majority of cases of serous pleurisy bacteriologic studies have been negative, no micro-organisms of any kind being discoverable in the effused fluid. The fact that the fluid of serous inflammation was free from micro-organisms early attracted the attention of bacteriologists and it was theorized that the purpose of the serous effusion was the destruction of the germs which were believed to be the cause of the inflammatory process. The fact had been known for some time that the blood serum of certain animals possessed bactericidal properties, as for example that of the rat against the anthrax bacillus, and that of the vaccinated guinea pig against the vibrio Metchnikowii, at least, in test tube experiments. But that experiments of this kind are an insufficient basis for drawing conclusions has been shown by Buchner and others, the bactericidal properties of blood serum, which are so evident in test tube experiments, often failing to develop in the living body. Later experiments, moreover, have shown that many bacteria are able to live and multiply in the fluid of serous inflammation, and hence the purpose of the exudate can not be bactericidal.

Another theory then advanced, was that the purpose of the effusion was to neutralize toxins, in other words, that the serous effusions contained antitoxins. This theory was naturally suggested by the remarkable discovery of Behring and Kitasato in 1890, that the blood of certain immunized animals possessed antitoxic properties. Tizzoni and Cattani later showed that the serum of rabbits immunized against tetanus is capable of destroying considerable quantities of the toxins of this disease.

The same results have been secured with respect to diphtheria, and the Klemperer brothers believe that they have proven that the blood serum of animals (rabbits), that have been immunized against pneumonia, and that of men who have recently recovered from pneumonia, possess antitoxic powers. This theory also appeared to be supported by the fact that Behring discovered diphtheritic toxins in the pleuritic effusion of rabbits suffering from diphtheria. The more closely, however, this point has been studied the more evident it has become that this view is untenable, there appearing no necessary connection between the production of antitoxins and the occurrence of serous effusion.

The pleura is a closed serous sac applied to, and in organic union with, the lung and costal parietes. Its internal surface is lined with endothelium, and in the cellular tissue subjacent, lymphatics are abundantly distributed, which, in the visceral portion, freely inosculate with the pulmonary lymphatics on the one hand, and on the other communicate by innumerable open mouths or stomata with the closed pleural sac. Within the subserous tissue the blood vessels form a wide meshed capillary reticulum over the whole surface of the lung, and these capillaries freely communicate with deeper vessels which originate in the interalveolar septa throughout the lung substance, and where ever there are fat sacs or lymphoid masses these are enclosed in capillary networks.

When we regard these anatomic conditions, in connection with the fact, that in case of infection in remote parts of the body the infectious materies may be brought, through the pulmonary and pleural capillaries, directly in contact with the visceral pleura before it is carried to other parts of the body, it will not seem strange that the pleura is very often the seat of acute inflammatory processes.

The fact that pleurisy is an extremely common affection is shown in the autopsy room, where it is comparatively rare to find perfectly normal pleuræ in adult cases. In a hundred autopsies, in adult cases, performed in the past three years, I have noted but eight in which there were no evidences that the deceased had at some time suffered from pleurisy. So common indeed are inflammations of this membrane that it has well been said, that it is the chosen site for the manifestations of lesions from blood contamination.

Pus germs, or their products, so frequently present in the bronchi, can readily gain access to this membrane. The products of the bacillus of tuberculosis are frequently brought to the same situation with resulting serous inflammation, there being entire absence of tubercle bacilli in the exudate. The fact that very many serous pleurisies are due to the products of the tubercle bacillus is established by records showing that nearly 40 per cent. of cases of serous pleurisy later develop the clinical features of pulmonary tuberculosis.

The pneumococcus and its products are frequently the cause of serous pleurisy, and the process in this instance is established in the same manner as in the previous case.

Serous inflammation, however, occurs also in connection with the peritoneum and the pericardium, but inflammations of these membranes are of much less frequent occurrence than are pleurisies. In their

histology these membranes are nearly identical with the pleura, their lymphatics originate in the same way, and they contain a capillary net work of blood vessels differing in no material respect from those already described in connection with the pleura. But these blood vessels are much further from the ordinary sources of blood contamination than are those of the pleura, and hence the comparative infrequency of inflammations of these membranes. The blood vessels of the pericardium are nearer to the sources of blood contamination than are those of the peritoneum, and pericarditis, as a consequence of blood contamination, is much more frequent than is peritonitis. But I think another explanation of the relative frequency with which these serous membranes are involved in the inflammatory process, except as a result of local causes, may be found in the relative time at which these structures have been developed in the progress of evolution.

It is a fairly well established fact that those organs and tissues of the body which have been latest developed in the progress of evolution from the lower forms of animal life to the higher, are those which are most frequently the seat of pathologic processes. The muscular system is the oldest and diseases of the muscles occur infrequently. The respiratory organs, being very lately developed, are comparatively often the seat of disease. A fair idea of comparative frequency with which diseases affect these two systems, the muscular and respiratory, may be derived from a comparison of the space required in which to discuss them in works on the practice of medicine. In the "Twentieth Century Practice of Medicine," the article on diseases of the muscular system covers but 44 pages, while 946 pages are required to deal with the diseases of the respiratory system.

An inquiry into the chronology of the development of the serous membranes under consideration shows that the peritoneum is the oldest, the pericardium next, and the pleura is the youngest. And we find that these membranes are endowed with the power of resistance of pathogenic influences such as would be indicated by their comparative ages, the peritoneum being most resistant, the pericardium next, and the pleura least of all. Serous inflammation of the peritoneum is a comparatively rare disease and is produced by very few irritants, the most common cause of serous peritonitis being the tubercle bacillus.

On the other hand, serous pericarditis may result from a much greater number of irritants, as for example, the materies of rheumatic fever, typhoid fever, pneumonia, by extension of the process from the pleura in cases of simple pleurisy, as a result of the infectious materies in various acute febrile diseases, and in connection with chronic Bright's disease and pulmonary tuberculosis.

Reverting now to what has been said as to the inflammatory process in general, the phagocytic reaction will be in direct proportion to the number and virulence of the micro-organisms present unless these are in such overwhelming numbers and of such virulence as to preclude all phagocytic reaction.

Carrying this idea into our inquiry as to the inflammatory product in cases of pleuritis we shall expect to find present in the exudate, cellular elements in direct proportion to the micro-organisms present as a cause of the process. And this expectation is verified by the result, the majority of pleurisies being secondary to other processes, and not involving the localization of micro-organisms at the seat of the inflammatory reaction, we commonly find very few cells in the inflammatory exudate, but where the inflammation is due to the transfer of micro-organisms from some other situation in the body to the pleura, the process there set up is of a more acute character and the inflammatory product is rich in cells, in other words, we have purulent pleurisy.

In the first class of cases the irritant is readily seized upon, removed or destroyed by the phagocytes, this reaction being attended by a contraction of the endothelial cells of the blood vessels to an extent sufficient to allow of a certain amount of diapedesis, with accompanying transudation of serum, and at the same time a cessation of the absorbing function of the capillary blood vessels, with consequent accumulation of fluid in the pleural sac. This sac being regarded as a large lymph space we have a process here which differs in no material way from ordinary inflammatory edema.

It would then appear unnecessary to search for some obscure explanation for the peculiar character of the product of inflammation of serous membranes. When we bear in mind the histology of the pleura, its numerous and intercommunicating lymph channels opening into the pleural cavity through stomata and intervening canaliculi, its wide-meshed capillaries freely inosculating with those originating in the walls of the pulmonary alveoli, its vulnerability to irritant substances of either organic or inorganic origin, the fact that, when the seat of inflammation, its capillary blood vessels no longer act as absorbents, it would seem that this particular kind of inflammatory product ought to be expected in the great majority of cases.

And further, it would seem that the true explanation is as follows: That in inflammations caused by irritants other than micro-organisms a limited phagocytic reaction only is called for, and this reaction being accompanied by sufficient contraction of the endothelial cells of the capillary walls to admit of diapedesis a serous effusion follows; this serous effusion is coincident with a cessation of the functional activity of the pleural capillaries as absorbents, it being a self-evident proposition that capillaries that are pouring out serum will not at the same time act as absorbents. The result of this combination of circumstances is an accumulation of fluid in the cavity of the pleura; and this accumulation of fluid must be regarded as constituting no necessary part of the inflammatory process, but as a mere concomitant, and conditioned upon the anatomic and physiologic relations of the parts involved, the essential thing being the phagocytic reaction, which alone constitutes the inflammatory process.

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Ultimate Results of Operations for Spina Bifida and Encephalocele at the Prague Children's Hospital since 1888: Without operation, death; with operation for encephalocele, 38 per cent. saved; for spina bifida, 41 per cent saved. Of those that survived the latter operation, 59 per cent. died within a certain interval afterward. C. Bayer adds that a favorable result can only be expected of the operation when there is no hydrocephalus, paralysis nor defects in important regions of the central nervous system. He no longer operates if any of these are present. He covers the sewed up, reduced meningeal sac with a flap of fascia or muscle, periosteum on the skull, and consecutive skin flap suture.—*Cbl. f. Chir.*, April 2.

HYPERKINESIS OF THE MUSCLES OF MASTICATION A SYMPTOM AND AN ETIOLOGIC FACTOR IN NERVOUS AFFECTIONS

PARTICULARLY NEURALGIA OF THE TRIGEMINUS AND DISEASES OF THE JAW.

Presented in the Section on Stomatology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY GEORGE V. I. BROWN, D.D.S., M.D., C.M.
DULUTH, MINN.

Kinetic action or movement is recognized in contradistinction to trophic action, signifying growth and structural change, and indicates, in greater or less degree, an expenditure of nerve muscular action, implying also an expenditure of nerve force. This within the limit of natural involuntary muscular action implies a corresponding increase of trophic action conducive to the condition of health and development, but if the nerve stimulus be over excited or too long continued, whether by some exciting cause directly affecting portions of the brain or spinal cord, by a state of general excitement known as a nerve storm, excessive voluntary action, or in any other manner extreme muscular activity be induced, there is an arrest of structural development and thus trophic action ceases with a corresponding loss of vitality and substance. Having these simple facts in mind it is easy to understand why localized symptoms of brain lesion should be, as they are, evident in paralysis and spasm of the muscles supplied with motive force by the nerve centers affected by the lesion.

A diseased condition capable of producing a spasm may also produce paralysis and any abnormal muscular activity particularly confined to certain muscles or groups of muscles may be taken as an indication of some disturbance of nerve muscular action.

In discussing the symptomatology of nervous diseases writers make frequent mention of both tonic and clonic spasms of the masseter and pterygoid muscles as in tetanus, epilepsy, lunacy, chorea, etc., while tooth-grinding is a symptom noticed frequently in such nervous disorders as migraine, hysteria, tetany, neuralgia, neurasthenia, paralysis and neuritis, and though noticed as a symptom by several authorities, has not been given the full consideration that it deserves.

Tooth-grinding is produced, as we know, by the action of the deeply seated pterygoid muscles, champing of the jaws, or the intense unconscious pressure (so frequently disastrous) by the masseter and temporal muscles, all of which are supplied by the motor division of the fifth nerve, and it is to their condition that we must look for information as to the condition of the central origin of the nerve.

Warner tells us: "Tooth-grinding is noted as a symptom common among those who suffer from nervous disturbances, choreic and like affections."

In classifying the primary symptoms of fifty-eight cases of children of nervous mobile temperament, under 15 years of age, suffering from headache, Warner says: "We find the largest number referable to the mental and cerebral condition of the child. We are told that he is excitable, melancholy, passionate of temper. His sleep is restless and disturbed by dreams and night talking, by attacks of terror and night screaming, or by somnambulism." In studying this group of nervous, excitable children, in whom recurrent headache was the main symptom, it was first necessary to look for certain objective signs by which they might be identified, and these were principally found in the condition of the nerve muscular system, the teeth and urine. In a large proportion of cases the teeth were found flattened on the edges as the result of tooth-grinding.

After describing in detail the various muscular conditions, he says further: "We may look for signs of irritation of the cranial nerves; evidence of disturbance of the fifth nerve is seen in the great frequency of tooth-grinding. Ground teeth are very common in nervous children, such as those who suffer from recurrent headaches, restless sleep, somnambulism and finger twitching. In lunatic asylums and wards for imbeciles it is very common to hear tooth-grinding on every side. In such cases it is a sign of central irritation of the fifth nerve. Seeing that slight nervous disturbances occurring during sleep in many children cause the pterygoids to contract rhythmically, it is not surprising that grave disease should cause spasm of the other muscles supplied by the fifth nerve as in epilepsy and hysteria."

H. L. Ranney ("Lectures on Nervous Diseases," p. 406), describing symptoms of chorea, says speech, mastication and swallowing may be seriously embarrassed; even the teeth have been known to be broken by uncontrolled movements of the jaw.

Dr. Herman, Hughlings Jackson and others also call attention to this, in a similar manner, as a symptom of these diseases, but I am assured that the widespread influence of the action of these muscles, not only as a symptom, but as a factor in disease, is by no means appreciated, either by physicians or dentists, to whom we might naturally look for its more frequent mention.

We note in the references quoted that the tooth-grinding and the actions of the muscles of mastication are considered as symptoms of some general or central nervous condition, without apparent reference to the fact that such action might be, and frequently is, an active factor in the development of many pathologic conditions arising from irritation of the fifth nerve and its associates.

It is a common thing whenever people can be seen in moments of abstraction or deep thought, to see the lines of the masseter muscles, and also of the temporal, coming into prominence, as force is applied, disappearing and reappearing as the action is repeated, perhaps for hours at a time. And such a frequent occurrence is it to note this habit that it passes almost without significance, whereas such a freak on the part of any other portion of the body would be at once set down to some pathologic disturbance of greater or less nervous importance.

In my practice as a dentist it has become known to me through years of puzzling experience that the continuance of this effort at night, sometimes accompanied by a gritting sound as the crowns of the teeth are ground upon each other by action of the pterygoid muscles or, as more frequently happens, held forcibly together under severe pressure by action of the masseter and temporal muscles, without sound, which accounts for many cases in which the cause of trouble has remained undiscovered for a long period of time, is a frequent cause of reflex irritation.

The movement of the jaw in man, by reason of the freedom allowed at the point of articulation in the glenoid cavity, differs from that of the lower animals in its capability, not only of the perpendicular move-

ment accomplished in opening and closing, but of lateral, transverse and antero-posterior action as well.

The occlusal surfaces of the teeth when brought together in the normal arch are so arranged that each tooth from the lower jaw fits exactly inside and between the cusps of its antagonist in the upper jaw in such a manner that the application of force by the muscles is distributed among the whole number of teeth with comparative equality, save when engaged in the act of crushing and mastication. This muscular force, according to Black, is about three hundred pounds in civilized man, though probably much greater among the savage races unused to modern methods of preparing food, but if by reason of malformation of the jaw, or failure of perfect adjustment, or through slight shifting of its position in closing, the tips of one or two teeth are brought together instead of the whole number, naturally the effect of the force applied is many times greater than it should be, so that when constantly repeated as in nervous habit or spasmodic contraction (and it would seem not unlikely that under these conditions much more than the three hundred pounds allowed in voluntary action might be applied) through traumatism caused by a blow on the jaw, or in some other manner a like result be accomplished, it is at once evident how naturally injury must result to the extremely delicately organized peridental membrane surrounding the root, and the communicating artery, vein and nerve as they pass from the pulp, within the tooth, to join the main branch of the nerve supply, either or both of which frequently cause pathologic conditions of a grave character.

The peridental membrane has great power of resistance and recuperation, but the continued repetition of such undue force must set up an inflammation capable of effecting some pathologic change in the highly vascular and neural structure with which it is associated.

The first effect is naturally increased blood supply, and the bony walls allowing no expansion as the vessels become enlarged, the roots, being conical in form, widening from the apex to neck, are pushed a little out of the socket; thus an aggravating symptom is at once the result, since the crown of the tooth is raised a little above its fellows and liability to constant irritation is assured.

In the acute form of pericementitis usually the soreness compels notice and forbids biting, owing to its painful tenderness; while the rest thus enforced enables nature to effect recovery, unless the inflammatory condition be the result of too active irritation, as from the pulp chamber, in which case it may continue to the consummation of an alveolar abscess. In the subacute variety, as in other like affections, the symptoms are less severe and may proceed to recovery or become chronic. The chronic form may present little or no pain upon percussion or pressure, but at the same time may be a painful source of reflex disturbance; may cause exostoses or degenerative conditions favorable to, if not indeed a common cause of, pyorrhea alveolaris, and so cause the destruction of the membrane. Thus excitement of undue kinetic action of the muscles of mastication may be considered not only as an indication of some disorder of the nerve mechanism, with perhaps tendency to grave trouble, but may actively cause not only reflex pain in the form of distressful headaches, neuralgia, hyperesthesia, anesthesia, and other affections of sensation, but motor troubles as well, and is of important consideration in cases of epilepsy, chorea, and various other neuroses, in diseased conditions of the peridental membrane, death of tooth pulps, alveolar abscess, secondary formations within the pulp chamber, empyema of the maxillary sinus and secondary affections of the eye, ear, nose, throat and stomach.

In order to impress the fact that the foregoing is not mere theoretical deduction and to call attention to the clinical aspect of the subject, I describe the following cases.

Case 1.—History of pain almost continuously for about two years, excruciating at times, particularly at night, less severe at other periods, extending over right side of face, forehead and region of the occiput; hyperesthesia so great that the face had not been washed for months; slightest touch to the surface of lower lip and cheek would cause intense agony. Teeth were all particularly good; no evidence of caries; arch regular, no apparent sensation to heat or cold applied to teeth; there was a slight dulness of sound upon percussion of right superior of first bicuspid.

Upon extracting and splitting the root the pulp chamber was found filled with calcareous degeneration of pulp tissue and pulp nodules. Immediately upon its removal all hyperesthesia left the face while the patient was still in the chair. The pain in the head was much relieved, but not cured. A further history of the case with more recent reports, would seem to indicate that being a typical neurotic, and having had what were termed by herself "fits" some years before, the force applied to the affected teeth during and since the spasms, as a result of this condition during paroxysms of pain, had produced the pulp degeneration, which, while evidently accountable for the facial hyperesthesia and much of the pain, was really secondary to a deranged condition of some central nerve, in conjunction with other motor nerves, and by reason of the undue force applied to the particular tooth affected had caused irritation, leading to the formation of pulp nodules and calcareous degeneration.

Case 2.—Mrs. S.; had one child with cleft palate. Suffered pain since 8 years old, supraorbital, paroxysmal, intense; teeth sound; no evidence of caries; on percussion right superior second bicuspid gave a duller sound than its fellows in the jaw; was not sore to touch, but was intensely sensitive to thermal changes.

Upon extraction the tooth was decalcified, and upon making microscopic sections minute growths were found along the inside of the pulp canal in the form of spicula, extending into the pulp substance, and though the pain suffered was evidently of an epileptic nature, probably the result of a fall in early life, these growths must have added to the suffering and were undoubtedly the result of irritation from the intense pressure during the paroxysms.

Case 3.—Miss —, 17 years old, a typical neurotic; high contracted vault, irregular teeth with the usual accompanying symptoms of adenoid growths, catarrh, etc.

History of almost continuous pain for a period of two years; sometimes on one side of the face and head, sometimes on the other, occasionally bi lateral, and varying in intensity at different periods.

The pulps of seven teeth in both jaws were evidently hyperemic, and extremely sensitive to thermal changes where large amalgam fillings seemed to have excited undue irritation; the pulps were devitalized, an extremely painful process, only relieved by grinding down the crown of each tooth so that it could not touch its antagonist when the jaws were closed. This was the only thing that was found to give relief, and one after another the crowns of the affected teeth were ground down so that they could not strike in occlusion. This would give freedom from pain for a number of months, and upon the return of pain some tooth would be found slightly elongated. Again grinding would relieve for another period. It is of interest to note that when this patient became overtired, particularly with social efforts, she would frequently awake in the morning after a night of disturbed rest, with a sense of numbness in the teeth and jaws, due undoubtedly to severe pressure, or would be awakened by the return of severe pain.

About the beginning of the trouble she had become engaged to be married; the engagement was afterward broken. Another young man was then affianced to her; this was also terminated, and during this interval of several months, but little or no trouble was experienced. Recently, however, the third engagement was coincident with return of the trouble, and it was disclosed that after spending an evening in the young man's

company much difficulty was experienced in going to sleep. Therefore, our conclusions are that in this case the motor branch of the fifth nerve was excited in sympathy with sexual excitement; pressure upon the individual teeth was intensified by irregularity in the conformation of the arch, and this irritation was communicated to the sensory portion of the same nerve, with the usual painful result. Instead of grinding I have for some time past tied a piece of rubber dam, over the crown of one of the unaffected teeth so that the jaws can not be brought tightly together. Relief is complete after a few hours, or if applied in the night, next morning the rubber can be removed and the difficulty is completely averted for the time.

Case 4.—Mr. ———, much annoyed with slight tinnitus aurium on left side. No evidence of local oral or Eustachian trouble, as testified to by several aurists. Teeth much abraded. Has been much relieved by treatment and grinding off crown surfaces of several teeth.

An occasional slight return of his aural trouble is generally relieved by removal of some occluding portion of the left superior central incisor, which seems to be particularly in sympathy with the ear at this time.

Case 5.—I have under my care at present a woman of about 40, whose incisors are worn almost beyond recognition; tendency to intense mental excitement upon slight provocation, particularly on subjects of politics, dress reform, etc., exists. She suffers from a difficulty of the right inferior extremity, threatening at times loss of sensation and motion.

After typhoid fever or other unusual drain upon the natural forces there seems to be a tendency to develop this habit of the jaws, and in many instances pain in the head and face had been relieved in my practice, by removing the possibility of continued irritation in the manner before described.

The fact that there is seldom soreness on percussion of such teeth, makes diagnosis frequently difficult and doubtless accounts largely for its not having been considered, as it should have been, as a diagnostic indication, but the surfaces of fillings, abraded crowns of teeth, or a dulness of sound on tapping with a metallic instrument will often serve to indicate in the absence of other and more marked symptoms of peridental inflammation.

A frequent complication from this habit, is pyorrhea alveolaris for which condition I have over and over again relieved the discharge about the necks of teeth and have hastened the retightening process of those loose in their sockets, by grinding them down to relieve unsual force in occlusion; its very common association with tenderness and pain following the process of devitalization of pulps, should make its consideration far more frequent than has hitherto been the case. Therefore, in the field of medicine, as a symptom of some neural disturbance of kinetic function or the direct excitant of some pathologic condition, the study of any abnormal activity of the muscles of the jaw is without doubt of far greater importance than is generally realized.

THE LIMITATIONS OF SERUM THERAPY.

BY JOHN MADDEN, M.D.

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A review of the literature of serum therapy of the last two years is likely to produce some confusion. In the light of what has already been shown to be true, much elaborate experimentation seems to have been purposeless and final failure might have been foretold at the beginning. One of the prime causes of much misunderstanding is the failure to discriminate between the production of immunity from a disease and the production of resistance against a disease toxin. There is a wide difference between the two processes and the probable manner by which they are brought about. In the former some change, the nature of which is not understood, has been produced which makes the body unfit as a culture medium for the growth of a particular bacterium and the consequent development of its special toxin. Ten years ago Buchner showed this substance to be an albuminous body which could be removed from the blood serum by dialyzation, and that it is the product of some unknown chemic reaction brought about by bacterial growth.

More recent investigations tend to show that a bactericidal substance resides in the granular matter of the leucocytes (Kanthock and Horry, Philadelphia Transactions, clxxxv, 1894; Vaughan and Novy, "Ptomaines and Leucomaines," 1896; Hankin, *Centralb. für Bakteriologie*, xii, and Mueller of Vienna, *Centralb. f. Allg., Pathologie und Patholog. Anatomie*, viii, 1896), and that these granules leave the white corpuscles and float free in the blood stream where they have the power of lessening the vitality of bacteria or destroying them altogether. In inflammatory diseases, such as pneumonia, pleurisy, rheumatism and erysipelas, there are an increased number of white corpuscles in the blood stream as well as a marked increase in the fibrinogen and serum-globulin (Halliburton, "Chemical Physiology and Pathology," pp. 306-7). It might therefore be assumed that here is an indication of disease producing its own antitoxin, and that when a sufficient number of white corpuscles are produced to destroy the invading bacteria the disease shall cease.

The problem, however, is by no means as simple as this. If the immunization or cure of a bacterial disease depended alone upon the mustering of an army of leucocytes sufficiently large to overcome and destroy the invading germs, then we should be able to show that the injection of anti-diphtheritic serum really increases the number of white corpuscles and that the subject is immune, not only from the Klebs-Loeffler bacillus but from invasion by all other bacilli as well. We should be able to show that vaccination with the kine pox permanently increases the number of leucocytes in the vaccinated subject and that he is rendered immune against all other bacteria forever.

As a matter of fact, however, when immunity is produced by an attack of bacterial disease or by inoculation in a modified form, that immunity is produced only against a subsequent attack of the same disease. It is clear, therefore, that the problem is a chemic one and that if the immunizing substance resides in the granular matter or if discharged from it, its chemic constituents must depend upon the disease against which the subject has been rendered immune.

If the chemic composition of the antitoxins thus produced were known as well as that of the toxins, the way would be paved for an exact knowledge of what might be expected as a result of applying antitoxin for the purpose of curing bacterial diseases; but so long as this remains unknown antitoxin therapy is liable to be more or less empiric.

It is well established that the changes produced in the blood serum by the development of an antitoxin is either for a time or permanently persistent. It also seems likely that the amount of antitoxin produced in each case is in direct ratio to the amount of toxin. This is well illustrated in vaccination with kine pox, in which the production of several well developed pustules attended with considerable febrile

reaction is usually followed by complete immunity against smallpox or against another vaccination. A very mild attack of scarlatina, measles, smallpox and some other eruptive fevers are sometimes followed by a second invason. Furthermore, in such diseases as are followed by only temporary immunity against subsequent attack, the more severe the attack the longer the immunity if personal peculiarities are eliminated. If this be true, it may be concluded that the antitoxin results from a reaction between the toxin and some albuminous constituent of the blood serum, not that the toxin makes a definite chemic compound as if it were an acid radical and the serum constituent a base, but the toxin is responsible for bringing the change about.

Granted, then, that the antitoxin is produced, it may act in two ways to effect a cure, by making further bacterial growth impossible or by combining with and neutralizing the toxin as fast as it is produced, until the bacteria cease from lack of pabulum to be virile. Indeed, it may be that the cell protoplasm, constantly bathed in the antitoxin serum, is in some unknown manner changed so that the toxin contact is no longer harmful and is eliminated without disease symptoms.

The next question is: Do all bacterial diseases produce an antitoxin? It is reasonable to conclude that in the self-limited bacterial diseases like diphtheria, typhoid, yellow and other eruptive fevers, a peculiar substance is produced which gradually increases and is persistent in the serum and acts as a remedial agent in some way similar to that indicated above. Is this self-limitation due to the production of the antitoxin? When more is known of the bio-chemistry of bacterial diseases this question will probably be answered in the affirmative. A powerful argument in favor of this answer is that bacteria will develop as long as a suitable culture medium is offered for their growth. Those taken from an old culture medium, the pabulum in which is almost exhausted and which shows very little vitality, become virile when transplanted into a new and favorable culture medium. With the tissue changes constantly going on in the body, even in disease, the blood serum is tolerably constant in its chemic composition; so we may conclude that the self-limitation is not due to the exhaustion of the culture medium in the involved subject. To further support this view, the tubercle bacillus and other bacteria may lose their virility by exhausting the pabulum of an artificial culture medium, while in the body they are virile during the life of the invaded subject, the culture medium showing no change detrimental to their growth.

The question whether an antitoxin may be produced without the intervention of the bacterium is not definitely settled. In 1887 Salmon and Smith succeeded in rendering doves immune against hog cholera by injecting the artificial culture medium freed from bacilli by filtration. Many other similar experiments have been carried out; but what warrant is there for saying that this substance contains the toxin of the disease alone? In the absence of exact chemic knowledge it might be assumed that, even in an artificial culture medium, there are antitoxins as well as toxins generated, and that by injecting the exhausted culture medium, the subject received both the antitoxins and the toxins, retaining the former and eliminating the latter, as is done in the course of disease. Here the presence of an antitoxin might easily escape notice in the overwhelming symptoms of poisoning produced by the toxin, if equal amounts were injected at the same time. Indeed, the antitoxin might be present in quantities much larger than the toxin, and, as far as its physiologic manifestations are concerned, entirely escape notice. As far as our knowledge is concerned all immunity produced by the injection of toxins may have been produced by the unnoticed antitoxins present.

We will now consider bacterial diseases which are not self-limited: tuberculosis, syphilis, leprosy and the like.

Do they produce an antitoxin? If so, why are they then not self-limited? There is no evidence that any of these diseases produce an antitoxin. The fact that they are not self-limited is a powerful argument against that hypothesis. If an antitoxin is produced by any of them, it is certainly different in all respects from that produced in the self-limited diseases, being insufficient in quantity, potency or persistency to produce any good result. When chemistry has mastered those complicated problems relating to the changes in the blood serum, produced by bacterial growth, we shall know why this is true, but for the present we must assume that the production of antitoxin in those diseases is an impossibility.

Certain animals are partly or wholly immune from particular bacterial diseases. The rat can not be inoculated with anthrax, the cow takes smallpox lightly and the horse is immune from tuberculosis. In some instances the blood serum of the immune animal will destroy the bacillus of the disease against which it possesses immunity, as in the case of the serum of the rat against the anthrax bacillus. In view of this fact, the question arises, whether the blood serum of an animal already naturally immune can be given greater bactericidal powers by injecting into the blood current the toxins of the disease against which it is immune? It can only be said that what evidence we have entirely supports the negative. The sheep and horse are both very susceptible to diphtheria and inoculation with the diphtheria bacillus produces a large amount of antitoxin. Shall we say that in exactly opposite conditions the same result would be had? Shall we say that the horse, immune against tuberculosis, a non-self-limited disease, will therefore yield a valuable anti-tubercular serum when injected with the toxins of tuberculosis? Certainly this is absurd; yet it is just what has been done during the last two or three years, by two or three men who have obtained considerable notoriety and profit. It certainly involves the heights of credulity to believe that the serum of an animal immune against a disease is rendered valuable, as a remedial agent for the same disease, by injecting it with the disease toxin without producing an antitoxin.

After the disastrous experience of a few years ago with Koch's tuberculin, it is not likely that any form or modification of the toxin, produced by the tubercle bacillus, will gain the confidence of the medical profession as a remedy for the disease. Tuberculin never did more than cause the breaking down of certain involved cell groups whose protoplasm was already surcharged with the poison. Under whatsoever modifications it may be used, it can never be of any value beyond an aid in making a diagnosis of tuberculosis.

As to the production of a resistance to a poison, that is quite a different matter from producing immunity, be the poison a disease toxin or something

else. Narcotic and other poisons may be taken in gradually increasing doses until an amount many times a poisonous dose, in the first instance, is readily tolerated. This means nothing more than that a resistance against that special form of poisoning has been established. Experiments of this kind have no value in serum therapy. It is quite likely that one might begin with a very small dose of some disease toxin, like that of tuberculosis or diphtheria, and by gradually increasing the amount exhibited, a resistance would be established which would make the injection of large quantities of the poison possible, but this is not immunity. The resistance would be speedily lost with the withdrawal of the poison, while a true immunity would persist for a longer or shorter time or permanently. The work of Calmette in establishing a resistance to snake poison is classed with serum therapy by some, but as a matter of fact it has nothing to do with serum therapy, unless it can be shown that these inoculations actually produce an antitoxin which renders the subject immune for a considerable time after the inoculations have ceased.

Referring again to the use of immunized horse serum for the treatment of tuberculosis and the favorable results reported, it is quite probable that all the benefits received by the patients subjected to the treatment were due to the serum itself and not to any added value it possessed by reason of the animal having been inoculated with tubercle poison. A Spanish physician, in Barcelona, reports good results from the injection of plain serum in cases of faulty nutrition in children. Indeed, the results reported are quite beyond belief. Its exhibition was followed promptly by an increase of the number of red corpuscles and a gain in weight. He also reported the cure of sixteen cases of chorea in a average of fifteen days, with the serum.

In conclusion it would seem, in the light of our present knowledge, that serum therapy is of value only in those diseases in which it produces an antitoxin and that an antitoxin is produced only in the self-limited diseases.

32 and 33 Sentinel Building.

PROLONGED GESTATION, ACRANIA MONSTROSITY AND APPARENT PLACENTA PREVIA IN ONE OBSTETRICAL CASE.

BY CHARLES REA, M.D.

PHYSICIAN TO CHILDREN'S HOME, YORK, PA.; MEMBER OF AMERICAN MEDICAL ASSOCIATION.

YORK, PA.

The following case, on account of its unique character, will probably be of interest:

About the middle of April, 1897, Mrs. F., 4-para, age 34, engaged me to attend her in confinement which was expected about July 1, 1897. When questioned, she told me her last menstruation occurred September 4, 1896, but did not indulge in sexual intercourse until two days before her next expected menstrual period, or September 30, and that she had not copulated for two months before this period and not at all afterward. Accepting these statements as facts, she should have fallen in labor about July 6, 1897. On June 20, I was summoned to her on account of a "severe period" coming on. Upon arriving at her home and making careful inquiry, I was told that two months before she had passed considerable blood and each time there was very little pain. A vaginal examination showed cervical dilatation to be practically *nil* and hemorrhage decided. Taking everything into consideration, it was decided to be a case of placenta previa. After concluding to dilate and deliver at once, the patient was ordered absolute rest, foot of bed elevated, cool drinks, etc., until an assistant could be procured. The patient when informed of what was proposed to be done strenuously objected and argued that she recovered all right from the attack of bleeding she had two months before and preferred to wait and see if she did not recover from this one. All my persuasion and instructions regarding the dangers of such a course were in vain. The next day when I called the patient was up and walking around the house as though nothing had happened. She was informed that she should send for me at once when the first evidence of her falling in labor occurred as it was then almost due. Nothing more was heard from her until Aug. 5, 1897, when the messenger announced that Mrs. F. had fallen in labor. Upon arriving at the patient's bedside and after thoroughly sterilizing my hands and arms, investigation showed labor well advanced with normal implantation of the placenta. To my surprise and relief, practically no blood was lost before or after delivery, but the child proved to be a monstrosity of the acrania variety. (For an almost exact picture of the monstrosity see cut on page 97 of "J. Lewis Smith's Diseases of Children" 7th Edition.) The vascular exposed mass looked as though it had been bleeding and had been partly covered by a very thin membrane. Probably less than one-half of the brain matter was present. In other words, if a plane had been passed from a point one-half inch above the supra-orbital ridges to the occipital protuberance it would cut off about as much of the brain matter as was absent in the child under consideration. The baby nursed naturally after the first day, but succumbed on the third day.

The first thing to engage our attention is the apparent prolonged period of gestation which, if the woman was not mistaken, was 305 days. We appreciate the fact that all histories regarding time of supposed conception must be accepted with considerable doubt, but, after questioning and requestioning the woman she would invariably tell me she absolutely knew there was no mistake. Inasmuch as several cases have been reported, from perfectly reliable sources, of much longer periods of gestation than this I simply bring out this feature of the case on account of the history seemingly being genuine. In one case, reported by Maur, gestation was believed to have lasted 334 days.

It is quite interesting to read the history of the theories as to the causes of these teratologic objects before the causes were analyzed and considered, from a scientific standpoint. Ambroise Paré,[1] says, "therefore, in times past there have been some, who nothing fearing the Diety, neither Law nor themselves, that is their souls, have so objected and prostrated themselves, that they have thought themselves nothing different from beasts: wherefore atheists, Sodomites, outlaws, forgetful of their own excellency and divinity, and transformed by filthy lust, have not doubted to have filthy and abominable copulation with beasts. This so great, so horrid a crime, for whose expiation all the fires in the world are not sufficient, though they too maliciously crafty have concealed, and the conscious beasts could not utter, yet the generated misshapen issue hath abundantly spoken and declared, by the unspeakable power of God, the revenger and punisher of such impious and horrible actions. For of this various and promiscuous confusion of seeds of different kinds, monsters have been generated and borne, who have been partly men and partly beasts." But it seems the real foundation for the scientific consideration of the subject was laid by Albrecht von Haller. His intelligent and scientific mind enabled him to analyze all the previous theories and make logical deductions. It appears that Bichat, the originator of the science of histology took up the subject where Haller left off. Through his efforts the subject of the study of monstrosities became identified with embryology. We believe now, as was

[1] Ambroise Paré: Surgery, 1579. Johnson's Trans., London, 1634, Book xxv, "Monstrosities and Prodigies."

believed in Bichat's days, that monsters resulting from retardation or arrest of development are partly permanent embryos. Without going deeply into the various theories, it seems the effect of maternal impressions in producing monstrosities is little when we consider that, as yet, not a malformation has been found that is peculiar to the human species. Ballantyne,[1] in his recent work, expresses his opinion that a definite impression upon a pregnant woman's mind never causes a defect in the fetus closely resembling the thing producing the impression, but he does say that the state of a woman's mind during gestation does have more or less effect upon the unborn infant's development and that the cases which have been advanced to prove effect of maternal impressions have been coincidences rather than the effects of alleged causes. External mechanical influences may act partly or wholly as the cause in some cases, but the most logical explanation is pathologic influences analogous to those which occasion morbid conditions in the body after birth. However, probably in every monstrosity numerous conditions have operated to bring about the anomaly.

That there was an abnormal implantation of the placenta in this patient's uterus, almost any physician would have thought and would have expected alarming hemorrhages at or before birth. The patient being a multipara, the previous nearly painless hemorrhages, etc., seemed to foretell that. This must have been simply a case of menstruation during pregnancy, or a metrorrhagia. Hemorrhages, however, unless caused by a vicious situation of the placenta, are very rare so late in pregnancy unless there has been menstruation during the entire gestation.

DENTAL FACULTIES IN MEDICAL SCHOOLS.

Presented in the Section on Stomatology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY RICHARD GRADY, M.D., D.D.S.

BALTIMORE, MD.

There is a sentiment abroad that some dental schools have not the equipment of faculties and instructors that they should have. It is a prerequisite for admission to the National Association of Dental Faculties, that the applicant shall have the endorsement of the board of dental examiners of the State in which it is located; and it is the rule of the National Association of Dental Examiners that an application for recognition by that body must come from a member of the Association of Dental Faculties.

"Dental schools are not being formed now from an educational necessity. Two impulses control this matter: 1, personal ambition to have a position in and be connected with a dental school, for the prominence it is supposed to give; and 2, a purely commercial spirit on the part of medical schools. Over 60 per cent. of our schools are appendages to medical institutions; and nearly every dental school started in these later years has been under this outside influence."

The Committee on Colleges of the National Association of Dental Examiners, recently expressed the view that more should be required to establish the right of dental schools to recognition than the fulfillment of the rules of the Association of Dental Faculties; evidence should be furnished that the teachers are of high standing, and that they and the school have the confidence of the local members of the profession. The committee also called attention to the impropriety of schools advertising as instructors, practitioners who occasionally hold a clinic before the students, but are not a part of the staff of the institution.

While "anybody with fair mechanical ability could pull or fill a tooth, I have seen good fillings inserted in teeth by a man wholly ignorant of the science of dentistry, and we have all seen the botches which educated men have made in attempting a similar operation," yet (in the words of an editorial in the *Dental Cosmos*), "the ability to teach dentistry is an acquisition quite distinct from, though supplemental to, the ability to practice it. So important has the art of teaching become that the study and investigation of its principles now constitute a distinct branch of scientific work, viz., pedagogics. To know dentistry from the point of view of the practitioner is one thing. To know it from the teacher's standpoint implies not only all that is included in the educational equipment of the practitioner, but in addition to this the important qualification of ability to impart successfully this knowledge to others."

The plan of requirements of dental schools, hereafter making application for recognition by the National Association of Dental Examiners, provides that each dental school must have a teaching faculty of at least three professors of dental subjects, namely: for operative dentistry, for dental prothesis, and for dental pathology and therapeutics; and at least five professors for medical subjects, namely, for anatomy, physiology, chemistry, pathology and for materia medica.

Let us consider one thought in the discussion of "the equipment of faculties and instructors." In none of the dental departments of the medical schools known to us is there, in the teaching faculty, a professor for "dental pathology and therapeutics." The title used by faculties is "M.D., professor of materia medica and therapeutics," as certified to by official documents. Now, we maintain that more than a medical education (so-called) is requisite to teach dental therapeutics. The therapeutics of dentistry, unlike its anatomy, physiology and pathology, differs from that taught in the medical schools. It is medical, surgical and prosthetic. In so far as it is a direction of medical science to the prevention, modification or removal, by medicinal or hygienic remedies, of the causes and effects of disease in the dental organs, it forms part of a physician's practice, just as does the treatment of cerebral, cardiac or pulmonary disease. In so far as it is an application of surgical skill to the extraction of teeth, to the removal of tumors, to the treatment of fractures or of fissured palate, it is simply oral surgery, involving only such knowledge and skill in the use of instruments as every surgeon must possess. But dental therapeutics includes a class of operations which medical men were not taught in medical schools, and which as physicians and surgeons they do not practice. The prevailing and distinguishing feature of dental therapeutics is the art of replacement; replacement of dental structure in such manner and with such material as shall prevent further action of the destructive agencies; replacement of dental organs by substitutes which shall

[1] Teratogenesis: An inquiry into the causes of monstrosities. History of the Theories of the Past, J. W. Ballentyne, M.D.

physiologically restore impairment of function, and esthetically restore the natural expression of the face; and this a person with a medical education alone is not qualified to teach.

CATAPHORESIS VS. THE DIRECT APPLICATION OF THE GALVANIC CURRENT FOR OBTUNDING SENSITIVE DENTINE AND HOW TO EXCLUDE BOTH.

Presented to the Section on Stomatology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY W. G. A. BONWILL, D.D.S.
PHILADELPHIA, PA.

When I speak of cataphoresis and the galvanic currents without medicaments, in 1856 to 1859, you will see that with all that has been done by the few workers in our profession, a quarter of a century had passed and no one thought there was anything in electricity until some one in medicine attempted to keep up with electricity in other branches and carry medicaments through the tissues as copper is supposed to be carried from one pole of a battery to the other as in electroplating; and now some dentist takes that up and tells us that cocain can be carried through the dense tissue of dentinal tubuli, and every one is ready to take it up as an insignia that makes it no better than an advertisement that he can perform all operations on the teeth painlessly. I remember, when I sent out a circular, on going into a new town in Delaware to get practice, what a commotion was set up and how every one was ready to try the new obtunder. Now after so many years have passed and this comes again to the light, do you wonder that I am more amused than chagrined?

At the meeting of the Odontological Society of New York, in October last, I presented before them the original patent gotten in 1859 for obtunding dentine and extracting pulps by the electric current alone. I made no effort at the time, nor since, to sell a single right to any one.

At this late date I submit to you the original document obtained by me in 1859 for doing then by the current alone what you are now called upon to believe can only be done by cataphoresis.

Aside from my own statement that I did successfully produce analgesia by the current alone as early as 1856 to 1859, you may have the many strong testimonials of Dr. Horton of Cleveland, Ohio, who has been doing the same thing by an improved galvanic battery and apparatus. "Why did I not continue to use it?" My reply is that I found, while experimenting with electricity, something better, which I have used all these years with other additional means.

Now, what have I to say about cataphoresis? Is it a fact that a drug can be dissolved in water, or any other media, and be made to traverse the dentinal tubuli and enter the pulp chamber and produce an anesthetic or analgesic effect by osmosis? Or can it directly paralyze the sensitive dentine upon its surface and sufficiently deep to enable the operator to cut with impunity, painlessly, as is claimed for most obtunders now found in the market? All who support this, claim that some effect is produced through osmosis and electricity the power that enables the drug to produce its effect by direct circulation through the tubuli of dentine.

I should not attempt to quibble over osmosis, or how or what does produce this supposed effect, but my long experience, dating further back than Dr. Richardson of London, entitles me to ask what is the real agent in this so-called wonderful discovery after nearly one-half a century's burial.

There are so many means of influencing, not only the human being, but all animals below man, as to make them believe almost anything you wish, even to the complete annulling of pain, that we must be very conversant with past history in this line to enable us to say what agent has produced this so-called cataphoresis or, as with other pain annullers, what is the true philosophy or *modus operandi* in analgesia? It is a subject that has called forth the thought and research of men through all time, and there is still a mystery, though the agents are still appearing and the last is claimed as the best.

Osmosis, according to the best authorities, can only take place between two fluids of dissimilar natures or densities or gravities, where a porous membrane of tissue intervenes, or where a porous porcelain cup is used, as where salt of different specific gravity is used on either side of a porous membrane, when the fluids will in a short time, without any electricity, become of the same strength or gravity; or, in a Bunsen battery, where the porous porcelain cup that holds the bichromate solution, or nitric acid, and the glass or outer cup holding the sulphuric acid solution of 1 to 12, when the current is passed, what effect is produced on the liquids and what becomes of the bichromate or sulphuric acid? Do they pass around through the galvanic apparatus or coil and through the interrupter? You know this can not be. They are simply neutralized and lose their power to produce an electric current. How can copper be carried through a porous cup and be deposited upon the opposite pole? How can you take the fluid containing cocain and pass it through a membrane that is not porous? Dentine is porous only when the tooth has been extracted and dried and is void or all organic matter. So long as it is in the mouth it is full of fluid that is not interchangeable by osmosis, unless you can produce in the pulp chamber and canal a different density to the fluids in the peridentium. If equilibrium exist between this medium of dentine on either side of it, then there is a *statu quo* condition and no osmosis. You might as well tell me that a cup can be made of dentine to take the place of the ordinary porous porcelain or burnt clay cup in a Bunsen battery.

Now, when I assert that in 1856 I did all this obtunding by the simple galvanic current, without dam or any other adjunct, and that Dr. Horton has done the same thing with his improved instrument and battery, what can you say in refutation? Why will you persist in this absolutely useless and unnecessary procedure; in loss of time; demoralizing your patients; trying to believe you are doing something that was never done before and is superior to all that was ever done in the past history of dentistry?

It is well to try to alleviate pain in any operation, but when all this can be done without it, and the patient is enabled to see that dentistry is not the inhuman thing dentists would have them conceive, and have them feel and know that they can be taught to bear all the pain consequent upon any operation upon the teeth, in excavating or removing pulp why should you not adopt means long ago in your grasp.

From the many experiments of others in electro-

therapeutics, as far back as 1860 osmosis was proven to take place by a current of electricity through a porous membrane or diaphragm, but never through bone, either in the living or dead subject; and even when the osmosis was affected through a porous animal structure or membrane or porous cup, it was only done after many hours. Teeth were extracted by electricity, in this city, as early as 1859, perhaps 1856, but it was only by the shock produced at the instant the forceps were applied and which produced a diversion of the will force, by causing a sudden and violent inhalation into the lungs, and while the lungs remained inflated, the effect was good, for the senses were for the instant submerged or subjugated.

This was taken up quickly by the profession everywhere, but it failed because dentists generally had no idea of the agent or how to use it, or why it produced the effect. They did not see its simple philosophy. They supposed it was the potential and specific effect of the galvanic battery current with an interrupter. But this was not true in the manner in which it was practiced. Thousands of batteries were sold, and ignorance of the real cause of success made it a curse rather than a blessing.

I bought an instrument, such as was to be had then and which was recommended, and it worked well for a single extraction, but not when I had several teeth to remove, as I was compelled to do at that time in the country, for I had no experience nor the means to save human teeth. I soon found that the public preferred extraction because it was cheaper. But from my use of the battery and by becoming familiar with its working upon myself and patients, I found that the coutinuous current, or when interrupted several thousand times a minute, would annul pain when the positive pole was directly applied to the tooth in excavating and the negative pole on the face or in the hand with no dam or other agent.

All of this work, however, was preceded by experiments in the use of chloroform directly upon myself. That I may have you understand the steps leading up to the discoveries and principles involved, and the cause of failures in so many otherwise good agents that are overlooked and abandoned; and why I assert that all this cataphoresis in dentine is only the work of the current pure and simple; and how many agents we have had at our disposal that, had dentists only learned to apply scientifically, we would not be trying everything offered as obtunders or anesthetics or analgesics.

You have certainly had enough of obtunders in the past decade alone to freight a ship, and each has had its friends, but is now giving way to cataphoresis, and the dealers are delighted to have another craze and stock the dental market with enough batteries to sink several fortunes, and soon to be set aside for another. The world craves some agent to quell the simplest stomach-ache, that as boys we thought nothing of. We are driving people to seek these agents to destroy one of nature's most gracious and beneficent gifts—pain—and lowering the moral status of mankind and rendering them hypersensitive to every change of the atmosphere. This is wrong, and the medical world is no better. It is well for major operations in surgery, but not where your ingenuity can plan not to use these agents.

I had learned the use of chloroform and ether from my father, and particularly from an M.D. who was exploiting these new agents and also had a galvanic battery. At that time (1856) it was not known that chloroform had any other than an anesthetic effect. It was not discovered that it could be taken to a degree or in quantity to produce what is now known as analgesia.

You will now see the first dawning in my mind of the nature of these annihilators of pain, for the application was first made upon myself, and was administered by myself, which led to the discovery that chloroform could be taken to that extent that I could excavate my own carious cavities without pain and yet be sensible of the sense of touch and ability to perform the operation upon myself. It was an amazing thing to find that while the sensitive dentine was so obtunded that I could cut it with impunity, yet the special sense of hearing and touch was exaggerated. The excavator seemed to me as large as a hoe and the cavity as capacious as a bushel basket. There was no pain and my will sense was not subjugated, only the voluntary mind had been partially annulled. I could scarcely believe my own senses. Yet several separate trials convinced me that I had discovered a new property or rather phenomenon—the analgesic effects of ether and especially of chloroform.

Chloroform, while it would do what I wanted, would make my patients too sick and I had to abandon its use.

It was then that the battery, for extractions alone, was first brought out in Philadelphia. I mentioned above the philosophy of shock in its action on respiration, and soon had it exemplified to the satisfaction of the patient that, while electricity would annul pain in dentine, and living pulps (if not inflamed) could be removed, yet the too strong application of the current gave the patient such a severe shock while excavating that a violent inspiration led me to exclaim, "nature's anesthetic," and I then saw it was diversion of the will power, for when the lungs were being inflated so violently, the will could not take cognizance of actual pain. It was for the instant complete. Let any of you hurt a finger and how soon it is put in the mouth and a violent inhalation taken several times until pain is relieved. The infant in crying violently, while in pain from an accident, is relieved and falls to sleep from the constant sobbing and increased inspiration. All temporary teeth I extract by this one sudden inhalation or diversion of the will, without a tear nor complaint. Two or three can be extracted while the breath is held in the lungs.

This led to the discovery that rapid breathing for sixty to ninety seconds, at the rate of 100 to the minute, would produce such an obtundity of the nerves and nerve centers that analgesia would be produced and the patient still be conscious of touch. This enabled me to perform all cases of excavating—extracting both teeth and the bony pulp, as well as all minor operations in surgery. A single respiration quickly taken and the breath held in the lungs will suffice for many trifling operations and all that is needed in extracting the temporary and permanent teeth of children. This was the birth of analgesia, in 1856, as proven upon my own person while operating upon myself.

This property of all anesthetics is very little known by medical men, and they have missed a very important part of anesthesia. Analgesia should be better understood and the application of rapid respiration would come into use in thousands of minor cases of operations where the custom is to completely anesthetize the

subject. Let surgeons and dentists learn how to produce this effect and ether, chloroform and gas would no longer be used in three-fourths of the cases. In many cases of midwifery it is all that is desirable.

Let any one imagine that they are blowing a fire to make it blaze, taking full inhalations and forcibly ejecting or blowing, which can be done at least 100 times a minute, and while the patient is doing this the operator should talk to him, say no pain will be produced and urging him to breathe in this manner until sixty seconds have passed, when the patient can not feel any pain, as the voluntary system is subdued. The pneumogastric nerve now says, you can not go on as life would become extinct. For the next three minutes the respiration is only about six to the minute, showing the blood has been over-oxygenated. The patient has to be urged to breathe. When this is done previous to using ether or chloroform only one-half the quantity is used, the effect is more profound and there is not as much danger. Since this discovery of the rapid breathing method, in 1872, although analgesia was discovered by me in 1856, and was the stepping-stone thereto, I have used no other means of painless surgery in dentistry.

Cataphoresis is not a fact as applied to sensitive dentine and should have no place in dentistry.

You now know why I abandoned electricity for obtunding sensitive dentine and extracting; for this revelation of how nature relieves gave me the clue to a brighter step which dentists have been slow to recognize as a fact. Had they done so, then you would not today be looking for any other agent in most of the cases it is our lot to have.

NOTE.—For the history of rapid breathing and its applications, etc., see *Scientific American* supplement, April 9, 1881, No. 275, p. 4386.

SOCIETY PROCEEDINGS.

Michigan State Medical Society.

The Thirty-third Annual Meeting was held in Detroit, May 5 and 6, 1898.

The Society met in Harmonie Hall, with the President, Dr. JOSEPH B. GRISWOLD of Grand Rapids, in the chair.

Prayer was offered by Rev. JOHN REID, D.D., of Detroit.

An address of welcome was delivered by Mr. BLADES, city controller, in the absence of the Hon. WM. C. MAYBURY, Mayor of Detroit.

The annual reports of the secretary, treasurer and publication committee were read and adopted.

The committee to petition the legislature with reference to an improved plan of registering births and deaths, Dr. Leartus Connor, chairman, reported, and the report was adopted.

Dr. C. HENRI LEONARD of Detroit, chairman of the committee to take action on establishing a National Bureau of Health, read the report of this committee, as follows:

REPORT OF COMMITTEE ON THE ESTABLISHMENT OF A NATIONAL BOARD OR BUREAU OF HEALTH.

Mr. President and members of the Michigan State Medical Society: As your chairman of this committee I have to report as follows:

During the past year there have been two quite prominent bills introduced into Congress looking toward the end desired. One of these bills was so imperfect that it met with almost unanimous objections from the medical press of the United States, as well as from the medical men to whom it was submitted for approval. The other bill is very bulky in its provisions but, shorn of some of these, would have been quite acceptable to most of the profession outside of the Marine-Hospital clique; it was this bill that our committee would have been called upon to enlist your sympathies for, had it not been for the outbreak of hostilities with Spain. The momentous questions concerning Cuba have so overshadowed everything of a purely civil nature that this bill, with sundry others, has been relegated to a more convenient season for discussion by Congress, though not "pigeonholed." This bill, to give a brief *résumé*, incorporates within it the following main propositions:

1. To gather information upon the state of the public health and the existence of contagious disease in foreign countries through the consulates of the United States Government; to digest and communicate the same to all government posts and health authorities of our country; through medical officers attached to the consulates, when requested by the masters of vessels destined for ports of the United States, to inspect the vessels, cargoes, crews and passengers (including their personal effects), to use measures for cleansing and disinfection, and to vaccinate those requiring vaccination (all at the expense of the vessel), to furnish bills of health relative to the port of departure and full dealing with the vessel, or to notify the Bureau by telegraph of neglect or refusal to accept such service.

2. To serve as a medium of intelligence in sanitary matters, including vital statistics, between health authorities throughout the United States.

3. To inspect the various quarantine stations of the United States from time to time; to investigate outbreaks of pestilential disease in any part of the Union; to report such inspections and investigations; to recommend to local health authorities needed preventive and suppressive measures.

4. To conduct chemic, physiologic and pathologic investigations in the interest of sanitation.

5. To publish and distribute documents relative to public health.

This bill was drafted by a special committee from the AMERICAN MEDICAL ASSOCIATION and it has been endorsed and advocated by the American Public Health Association—the largest body of sanitarians in the whole world at the present time.

The Marine-Hospital corps is against its passage purely from personal and selfish reasons, as when passed, it makes them subsidiary to the Bureau, and so curtails some of the fat offices that are now at the disposal of the Marine-Hospital Service.

The bill as proposed recognizes each State of the Union, in that a member shall be chosen from each State to represent it on the general national board or Health Bureau, thus forming a sort of advisory council to the commissioner of public health, much as the President of the United States now has his cabinet officers about him for advice and counsel.

Your committee has just learned that the representative for Detroit in the House, Mr. Corliss, has recently introduced a bill to enlarge the Marine-Hospital and naval interests, so as to embrace the controlling of the States in medical matters by it, and so wipe out the chances of getting the bill passed that has met with the approval of the majority of medical men of the United States, and which we have above given the summary of. This we regard as inimical to the best interests of medical and sanitary control. We all know the offensive ways of these "water" medical boards, and your committee verily believes it will be a sorry day for the medical profession of the United States when this general control shall pass under the thumb of the bickering Marine-Hospital Service. Hence we offer the following resolutions for immediate action of this Society:

Resolved, That we, the members of the Michigan State Medical Society, view with alarm any attempts of our government to substitute a Marine-Hospital bill or medical Navy bill for the one now before Congress that has met with the endorsement of the American Public Health Association and the approval of the committee from the AMERICAN MEDICAL ASSOCIATION, the largest body of medical men on this continent.

Resolved, further, That a copy of these resolutions be sent to Representative Corliss, asking for his withdrawal of the bill he introduced, if possible, as being unrepresentative of the wishes of the medical profession of the United States.

Resolved, further, That a copy of these resolutions be sent to each Michigan Congressman asking for his help to defeat the Corliss bill, in case it is not or can not be withdrawn, and that each member of this Society write a personal letter to his Representative, asking him to use every means possible to defeat the Corliss bill.

Resolved, further, That the representatives from this Society to the next meeting of the AMERICAN MEDICAL ASSOCIATION be instructed to advocate measures looking to the defeat of this Corliss bill, when they meet with that great body of medical men so soon to assemble at Denver.

Resolved, That a copy of these resolutions be sent to the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for publication.

Signed, C. HENRI LEONARD, Chairman,
A. W. ALVORD.
D. W. C. WADE.

On motion, the report was unanimously adopted.

The committee appointed to consider the establishment of a Michigan State Medical Society journal, reported through the chairman, Dr. Hugh McColl of Lapeer, that after considerable correspondence with States which publish their transactions in journal form, the committee does not recommend any change in the present method, namely, of issuing an annual volume of Transactions.

The report was adopted.

Dr. H. W. LONGYEAR of Detroit, delivered the annual address as orator of the section on obstetrics and gynecology, entitled

CONSERVATISM IN ABDOMINAL AND GYNECIC SURGERY.

He said the history of abdominal and gynecic surgery showed a very slow state of development until the advent of asepticism gave it an impetus that has caused more history to be written on these two branches of the surgical art than was recorded during all preceding times. Reference was made to the discoveries of Lister, which was the beginning of the bright era of surgery. The fearlessness of the peritoneal cavity had led to extensive experimentation within its once sacred precincts, much of which is already yielding large returns in the lessening of human suffering, the saving of human life and the glorification of the science and art of nineteenth century surgery. There was already springing up a class of operators in America, men of experience, skill and integrity, who were adopting the conservative plan in the matter of diseased appendages and of hysterectomy. Normal ovaries were not removed, and some operators even advocate the leaving of small fragments of healthy ovarian tissue, when possible, for the purpose of preserving the natural functionation of the generative organs. Healthy tubes were left *in situ*, and catarrhal uteri were treated by other methods than by removal.

Dr. WILLIAM FULLER of Grand Rapids, delivered the annual address as orator of the section on surgery and ophthalmology, entitled

THE RELATION OF ANATOMY TO SURGERY AND MEDICINE.

He said, the present neglect of anatomy had arisen from the establishment of the laboratories in chemistry, physiology, pathology and bacteriology, besides the introduction of studies upon comparative anatomy and embryology, all of which might be of great scientific value, but certainly they had in his opinion deprived the medical student of the time and opportunity necessary to the acquisition of that knowledge which in practice will be of everyday use to him in the diagnosis of disease and at the side of the operating table. He believes that advanced courses of instruction, as preparation for the practice of specialties, for positions in the army and navy, railway surgeons, health officers, physicians of asylums and other public institutions, would be of great service in qualifying men to fill these responsible positions. If such degrees of qualifications were established by medical schools, it would surely follow that such degrees would be recognized by legislation, and that appointments would be made from among those who were especially adapted by a particular course of study. If some such plan of medical education was adopted there would be less excuse for the neglect of the primary and practical branches of medicine.

JOINT SESSION OF THE THREE SECTIONS.

At this session there was a symposium on

SEPTIC DISEASES OF THE ABDOMEN AND PELVIS.

Dr. CHARLES T. MCCLINTOCK of Detroit, discussed the etiology. For the production of sepsis in the abdominal and pelvic organs, as elsewhere in the body, two things were necessary: 1. The source of infection. Without bacteria there is no sepsis. 2. Lowered resistance of the tissues; healthy normal tissue does not suppurate. It was only in dead, wounded or weakened tissue that the suppurative bacteria grew and produced pus. The source of infection may be a suppurating focus in any portion of the body. We may have a peritonitis, the source of infection being an erysipelas of the face, or a suppuration in the foot. We have abscess of the liver traceable to amebic dysentery located in the colon. Of the causes that enfeeble tissues and render them susceptible to suppuration, probably inflammation is the most important, and this inflammation may be brought about in several ways. There are many examples where infection is traced to the open Fallopian tubes. Instances were cited. Tuberculosis of the genital organs is much more common in the male than in the female, yet peritoneal tuberculosis is very rare in the male, while not uncommon in the female, apparently pointing to infection through the Fallopian tubes.

Dr. HERBERT M. KING of Grand Rapids followed with a contribution on the blood. He showed a few of the practical advantages accruing to the practitioner by examinations of the blood in the diseases under discussion. There are generally recognized three distinct degrees, if not kinds, of sepsis, in any one variety of which the blood presents certain modifications not always, however, sufficiently marked to make the differential diagnosis a matter of certainty. The first and mildest form, termed by Bergmann fermentative fever, septic or resorption fever, is by many thought to be in reality a very mild sepsis, where for unknown reasons the pathogenic micro-organisms are at least virulent or where conditions of the body are such as to overcome immediately the toxic effects and to resist development from absorption of further toxic material. Such so-called reaction as tends to the absorption of small blood clots, post-operative, or following extravasation of blood from contusions, or perhaps a slight febrile reaction occasionally following parturition, subsiding within a few hours and without any untoward results, are all representative of this form of sepsis. In these cases the blood was less often studied.

The second form or degree is that most frequently met with, the one in which the reaction in the blood is most marked and characteristic, and in which the natural course tends to recovery, but which by long continuance of the septic leak in the circulation, or the supervention of the third and most malignant form, not rarely terminates fatally. This is a septic intoxication due to the entrance into the circulation of the toxic products of pyogenic organisms, but not to any extent of the organisms themselves. This is the common puerperal sepsis ending in recovery; or appendicitis, where the inflammatory focus remains localized; or the common form terminating in recovery following abdominal section, etc.,

True septicemia constitutes the third form or degree of sepsis, and is distinguished from the other forms by the entrance into the circulation of sufficient numbers of pyogenic organisms themselves to overcome resistance, either in the form of phagocytosis or antitoxemia.

Blood examinations are of inestimable value as diagnostic aids in distinguishing between sepsis arising from pelvic and abdominal sources and certain diseases, which from clinical appearances simulate it closely. The state of the blood also aids greatly in the prognosis of septic disease, and is an indication for operative interference. Surgeons are more and more availing themselves of its aid, and with the establishment of a clearer comprehension of the causes of leucocytosis and the origin and destiny of the various elements, both normal and pathologic in the blood, there will no doubt be thrown a new light upon the history of the disease under discussion, as well as upon many others.

Dr. H. B. OSBORNE of Kalamazoo dealt with septic infection of the peritoneal cavity, its diagnosis and treatment from a medical standpoint. He enumerated some of the standard measures used in the treatment of the disease. He thought that we still had other valuable aids in the nucleins, the antistreptococcic serum, and the allotropic form of silver, brought to the attention of the profession by Dr. Credé of Dresden, at the International Medical Congress held in Moscow last year. This preparation is readily absorbed when applied to the skin and is soon found in the blood, the intestinal contents and the urine. The nucleins may be used per os and hypodermically. When a microscopic examination shows the presence of streptococcus infection, antistreptococcic serum should be used. In peritonitis arising from appendicitis, just so soon as the diagnosis is fully made he thinks the case becomes a surgical one and operative interference should not be delayed. When peritonitis arises from tubal infection a longer delay is justifiable with the hope of relieving the patient by remedial agents.

Dr. HUGH MCCOLL of Lapeer discussed the medical treatment of septic peritonitis. The medical treatment of septic infection of any part of the great lymph sac (the peritoneum) is much the same. Whether the poison is in the pelvic cavity or in the region of the appendix, or in the liver or kidney, the cardinal principles of treatment are similar. The first and most important of all was rest, absolute rest. The patient should be put to bed and kept perfectly quiet till fully convalescent. If the temperature is high and pain severe, the cold coil will give relief and diminish the tendency to extension of the inflammatory process. In some cases, however, heat is better borne and should be continuous at as high a degree as the patient can bear, never allowing the temperature to fall. With either the hot or cold constantly kept up the diminution of blood supply is brought about and the exudate is lessened. Hot vaginal and rectal douches were very useful to relieve pain and to supplement the external applications when the inflammation is confined to the pelvis. Liquid nourishment in concentrated form should be used and no solids given till convalescence is established.

Dr. WILLIAM F. METCALF of Detroit spoke of the surgical treatment of septic diseases of the pelvis, and outlined the general principles which governed him in dealing with these

conditions. The character of the invading micro-organism, the location of the resulting lesions, the reflex disturbances, the resistance of the tissues, the age, circumstances and environment of the patient were the determining factors in the method to be employed. In cases of endocervicitis the application of equal parts of Churchill's tincture of iodin and carbolic acid was effectual. In many cases the sphincter at the internal os guards effectually the corporeal endometrium from invasion.

The author next considered septic invasion of the endometrium of the non-pregnant uterus. When a collection of pus is below the wall which separates the pelvic from the abdominal cavity, free vaginal incision and drainage were all that was required, provided the damage to the uterus and its appendages could be remedied, and in many cases where a radical operation was indicated, it was advisable to precede it by vaginal incision to relieve septic symptoms and increase the vitality of the patient. A typical case was cited in support of the above statement. The experience of the author leads him to assert that there is much less shock attending work done through the vagina than by the abdomen.

Dr. CHARLES B. NANCREDE of Ann Arbor spoke on the surgical treatment of peritonitis and stated, in the form of propositions, certain facts as they appeared to him, without any explanation or defense of the position assumed on account of the great scope of the subject and the limited time at his disposal. Post-operative peritonitis or that following infective processes in a parietal wound was usually a mixed infection, the predominating organisms being pyogenic cocci, rarely bacilli. The occasional presence of bacilli in conjunction with other micro-organisms, *i. e.*, mixed infection, shows that the surgeon is not always blameworthy because bacilli may either intensify the action of other germs present in too small number to be harmful or actually be the chief factors in a peritonitis following operative interference. Intestinal paresis can best be prevented by early operation because it results from an infective process which can often be successfully combatted in its earliest stages. Increased frequency of pulse, especially when out of proportion to either temperature or respiration, more surely indicates the need for operation than any other symptom. High temperature, great pain and abdominal distension, with or without vomiting, may be and often are sufficient indications, but may all be absent in some cases most urgently demanding surgical interference. Any extension of a peritonitis, shown either by an increase of the local or general symptoms, still more by both, usually demands prompt intervention as a life-saving measure. Generalized, *i. e.*, septic peritonitis, can not be efficiently treated by mere irrigation and the introduction of drainage tubes. Too much stress can not be laid upon the imperative necessity of previously walling off of the general peritoneal cavity by careful packing with gauze when opening any intra-abdominal pus collection, which alone renders the procedure either justifiable or safe. The pus, when possible, should be removed by pieces of gauze or sponges, rather than by irrigation, which might diffuse the infective material over a wider area. Irrigation, however, is sometimes the sole or most efficacious means of removing the pus. When doubt exists as to the necessity for drainage, the introduction into the peritoneal cavity of one or two pints of warm saline solution, close suturing of the wound, and elevation of the foot of the bed for about eighteen inches will often prove sufficient. This position tends to relieve the abdominal distention, favors the normal peritoneal current toward the diaphragm, the peritoneal covering of which Clark has shown plays an important rôle in the removal of fluids and germs from the abdominal cavity. Assumed immediately after operation, it materially lessens accumulation of blood in the abdominal viscera, one of the most important factors in preventing shock and lessens the tendency to oozing. Codein rather than morphia must be employed to secure sleep. Morphia if never indicated in the opinion of the author as a curative agent and should be rarely needed to secure sleep. Tubercular peritonitis is best treated by incision, separation of soft adhesions, free irrigation and closure of the wound without drainage.

Dr. W. H. HAUGHEY of Battle Creek read a paper in which he described "The Haughey Suture." A description of this suture was published in the JOURNAL Feb. 20, 1897, p. 346.

Dr. JOSEPH B. GRISWOLD delivered the annual address as President, entitled

WHERE ARE THE NINE?

He outlined the history of the art of medicine from the earliest times and traced the growth and development of it down through the Greek and Roman schools to date, referring in the highest terms to the code under which Hippocrates practiced as perhaps as perfect a one as that under which most physicians worked today. The speaker discriminated between medicine as a trade and medicine as a profession, pointing out that the difference was that existing between manual and mental labor. He censured severely the indiscriminate publication of successful surgical operations in the daily press as being on a par with the efforts of the tradesman to advertise his business. Who benefits by these publications but the operator? The habit was both undignified and pernicious. In spite of the recognized desire of newspaper reporters to get any and all the news they could, all high-minded physicians should refuse to cater to the natural inclination to put themselves in print. He referred to the necessity for every physician to keep himself in touch with the development of the profession. In these days, when tradesmen of all classes are high school, if not college, students, have their trade journals and maintain a high standard of education, the physician must keep up a continual course of study for the sake of the dignity of the profession. Dr. Griswold dwelt on the subject of medical legislation and said that all attempts in that line in Michigan had proved abortive. Nothing had been done to free the people of the State from parasitic quacks and sham doctors. He accounted for the lack of such legislation on the ground that every bill presented met with violent opposition from the profession itself, and every bill emanating from the profession was looked upon by the legislators with suspicion.

The Chairman of the Executive Committee, Dr. E. S. SHERRILL, had prepared an excellent entertainment which followed the President's address.

In the Section on Obstetrics and Gynecology Dr. JAMES G. LYNDS of Ann Arbor reported two interesting cases. The first was an unusually large ovarian tumor with numerous complications, the details of which were clearly set forth. Six weeks after operation, when the woman had gained probably twenty or twenty-five pounds in weight, she weighed 154 pounds, just 111 pounds less than before operation, so that the speaker estimated the weight of the tumor at 125 pounds, the largest tumor, so far as he knew, that had ever been successfully removed in the State of Michigan. The second case was one in which the production of premature labor was scarcely to be considered on account of the unfavorable position of the cervix and uterine axis, which would render the use of forceps, version or embryotomy unquestionable, and, in the opinion of those who saw the case, more formidable and dangerous than Cæsarean section. The author consequently selected the latter and decided that the Porro-Mueller modification was the precedure best adapted to the case. The case emphasized the value as well as the necessity of seeing such patients early, carefully weighing the value of each and every procedure and electing the one best adapted to the case, as well as the time most favorable for its performance.

Dr. A. N. COLLINS of Detroit, discussed the practical value of proper diagnosis of presentation in instrumental delivery. He said that if we are to use forceps intelligently, it is necessary to use them in conjunction with our knowledge of position as rotators first, as pulling instruments second. When we have become skilled in this, the cases will be found few and far between where the light Eliot forceps will not answer all purposes, and we will not need the lithotrite attachment except in cases demanding craniotomy.

Dr. J. PLAYFAIR MCMURRICH of Ann Arbor, reported an exceedingly interesting case of fusion of two kidneys. The speaker had looked over the literature of the subject of anomalies of the kidney as far back as 1623, and had only been able to find twenty-seven recorded cases similar to the one he had shown, his being the twenty-eighth case.

Dr. J. A. PORTER of Brooklyn reported an interesting case of kraurosis vulvæ.

Dr. E. M. HOUGHTON of Detroit read a paper entitled "Ergot Aseptic."

Dr. J. H. KELLOGG of Battle Creek, contributed a paper in which he dwelt upon physical training as an essential factor in the radical curative treatment of the chronic pelvic disorders of women.

In the Section on General Medicine Dr. William Fuller of Grand Rapids, exhibited several interesting pathological specimens, Dr. F. G. Novy of Ann Arbor, discussed the subject of, 1, the disinfection of rooms, and 2, the etiology of yellow fever.

Dr. C. D. AARON of Detroit, spoke of chronic dyspepsia and chronic catarrh of the stomach.

Dr. A. W. CRANE of Kalamazoo, read a paper in which he dwelt upon the missing links in the chemical examination of the blood.

Dr. C. G. JENNINGS of Detroit, made some remarks on infantile scurvy in Michigan. He was followed by Dr. F. W. Robbins of Detroit, who spoke on disease of the seminal vesicles.

In this Section, other papers that were read are as follows:

"Epidemic Jaundice," by Dr. E. H. Pomeroy of Calumet; "Sensory Nerve Endings in Striped Muscles," by Dr. G. C. Huber of Ann Arbor; "Syphilis of the Nervous System," by Dr. Charles W. Hitchcock of Detroit; "Vapor Massage in the Treatment of Respiratory and Aural Affections," by Dr. H. M. Dunlap of Battle Creek; "Minute Pathology of Acute Pancreatitis," by Dr. A. S. Warthin of Ann Arbor; "Antitoxin and Intubation, with a Report of One Hundred Cases," by Dr. B. R. Shurly of Detroit; and "Saline Cathartics," Dr. A. R. Cushny of Ann Arbor.

Dr. SAMUEL BELL of Newberry, contributed a paper in which he spoke of some of the results of the administration of the thyroid extract upon the red and white corpuscles and hemoglobin in cases of anemia associated with melancholia.

In the Section on Surgery and Ophthalmology, Dr. C. D. Aaron spoke of transillumination of the stomach, and made a demonstration upon a living subject.

Dr. W. F. STRANGWAYS of Flint, read a paper entitled "The Four Tonsils; Some Things Experience has Taught me."

Dr. H. O. WALKER of Detroit, read a paper on the radical cure of hernia by the Fuller method, and reported interesting cases.

Dr. I. N. BRAINERD of Alma, reported cases of brain surgery.

Dr. THEODORE MCGRAW of Detroit, discussed Bottini's operation.

Dr. J. HENRY CARSTENS of Detroit, read a paper on nephrectomy.

Dr. FRITZ MAASS of Detroit, spoke on the subject of the importance of rapid pulse in appendicitis. Does it contra-indicate operation? Dr. S. C. Graves of Grand Rapids, followed with reflections on the treatment of appendicitis.

Dr. F. B. WALKER of Detroit, read a paper entitled "Some Remarks on the Practice of Surgery."

The following officers were elected for the ensuing year: President, E. L. Shurly of Detroit; first vice-president, A. W. Alvord of Battle Creek; second vice-president, Rush McNair of Kalamazoo; third vice-president, D. W. C. Wade of Kolly; fourth vice-president, J. Van der Laan of Muskegon; recording secretary, Collins H. Johnston of Grand Rapids; treasurer, C. E. Hooker of Grand Rapids. Place of meeting, Kalamazoo.

Medical and Chirurgical Faculty of the State of Maryland.

One Hundredth Annual Session, held at the Hall of the Faculty at Baltimore, April 26 to 29, 1898.

FIRST DAY—AFTEENOON SESSION.

The session was called to order at 12 o'clock noon, Dr. CHAS. M. ELLIS of Elkton, President, in the chair. Drs. J. WILLIAMS LORD and ROBERT T. WILSON, Secretaries.

Dr. CHARLES M. ELLIS, the President, spoke of the improved financial condition of the Faculty, and referred to the fact that in one year we would celebrate the completion of the one hundred years of existence as a medical society, and we hoped then to have all our debts paid and a sum of money as a surplus laid by. Up to the present time fifty-one members had applied for admission.

Dr. J. B. PURNELL of Snow Hill, then read a paper on "School Desks, Eyesight, etc., Cases in Practice, Alcohol and the Gastric Secretions," in which he spoke of the size of the school desk in proportion to the children using them, and the effects it had on the eyesight, and referred also to the adjustable school desk. He mentioned several cases in which he had especially good results from the use of ordinary drugs, and in conclusion, referred to some of the ill effects of alcohol on gastric secretion.

Dr. EDWARD ANDERSON of Rockville, read a paper entitled

THE ANTISEPTIC OR GERMICIDAL TREATMENT OF DISEASE.

He said that we should not rely too much on text-books but use our own experience. We do not remember in using germicides that the blood has marked germicidal properties, and we should also bear in mind that such substances as common salt have a certain amount of antiseptic and germicidal power. In many cases of infant diarrhea he had found great benefit from antiseptics, and thinks that as soon as physicians cease to consider these as local troubles, the better it will be for the patients themselves.

Dr. W. B. PLATT made report of

THIRTY-FIVE CASES OF HIP-JOINT DISEASE TREATED AT THE ROBERT GARRETT HOSPITAL FOR CHILDREN.

He said that hip-joint trouble is one of the most tractable diseases when treated early, but when treated late, one of the most intractable diseases. There is always a serious question about when to operate and when not to operate. Sometimes it is better to do it early and sometimes late. It depends on the condition of the patient, surroundings, etc. Some cases can not be kept in the hospital long and do not recuperate properly after the operation. The results after resection of the hip-joint are often very good even when done late. He had two or three cases of his own in mind—two doing well, and one not so well. One is wearing a brace and high shoe. The third case died of shock soon after the operation, but died outside of the hospital. Some cases will recover after careful curetting of the sinuses and cleaning them out. Hip-joint cases are extremely susceptible to eruptive diseases. He noticed that in the large number of cases he had in the Robert Garrett Hospital those with hip-joint trouble had been especially affected by such diseases as measles and scarlet fever. Joint diseases are usually attributed to injury, but this cause can not always be relied upon. In nine out of his thirty-five cases there was a clear history of injury. In eleven the right side was affected, and in twenty the left side was affected, and in these thirty-five, seventeen were boys and eighteen girls. Twenty-three had no sinus, and twelve had them. He showed two very interesting cases of double hip-joint disease, which were making a very good recovery.

Dr. ANDERSON, in commenting on this paper, said that he had often noticed a great amount of counter-irritation, and that when one hip became diseased the other grew better. He noticed also that in cases of consumption, when sinus was established, the lung trouble often grew better.

Dr. PLATT said that it had been said that heredity played a great part in these hip-joint diseases, some asserting that it was hereditary for two generations back. Tuberculosis is so common that it is a little uncertain whether that has the influence it is said to have. We know that so many of these cases die of tuberculosis, but he did not think that the joint trouble was necessarily the cause of the tuberculosis. There is no reason why these hip-joint cases should die, and in fact, many do not die.

Dr. J. C. HARRIS spoke of the extreme tenacity of life exhibited by some cases of hip disease and instanced cases in his own recollection.

EVENING SESSION.

After reading the minutes of the previous meeting, Dr. CHARLES M. ELLIS, President, delivered his address entitled

THE COUNTRY DOCTOR.

He showed how the country doctor differed from the town doctor; what his needs were and the difficulties for overcoming them, and finally made some suggestions for helping him. He made no attempt to throw around him the glamor of romance and poetry, but exhibited the man only as he knows him, with all his virtues and his vices; often without the proper equipment; with no help at hand as in the case of the city physician. He then gave a very minute description of the life, habits and characteristics of the country doctor. Many a physician in the country grows to be a very important man, and takes the lead in his community, and such a man may have many faults, but they are known more to himself than to his neighbors. Such a man gains the respect of all around him, and soon grows into the perfect family doctor. He makes no attempts to specialism, but is ready in all emergencies. In surgery, obstetrics, in skin diseases, in fact, in any department he must be ready to act without consultation. And while he must succeed in all branches of surgery, he is also successful, as a rule, in internal medicine. There are few such men who can fill all these requirements, but the type serves to show the difference between the city and the country physician. But men who are so successful rarely stay in the country. Like Sims, Agnew, Goodell, and others, they soon find their way to the large cities where they make their mark.

The greatest objection to the country doctor is that, as a rule, he takes a short course in medicine, and then is launched upon his field of labor without any further experience. The city doctor has the advantages of medical societies and intercourse with colleagues and post-graduate experience, while the country doctor has to exercise his own ingenuity, and it is in the constant exercise of his own natural resources that his education is completed. It is this habit of self-reliance that makes him such a capable man, but he also may become too conceited and have too much self-esteem and self-possession. Then, in a small place there are the effects of social surroundings and professional jealousies which are more felt than in the large cities. The city and country doctor are supposed to be alike at the start, but the city doctor soon leaves the country one far behind. There is one way in which the facilities of the country doctor might be improved, and that is by the establishment of cottage hospitals throughout every community. Then again, the country doctor should take a post-

graduate course at the end of his fifth and his tenth year, and nothing should ever prevent his doing this. The county medical society should also be cultivated and the meeting never be missed. The country doctor should also belong to the State society, and this he should consider important second only to his own county society.

The want of books and the absence of hospitals is a great drawback to the country doctor. This could be, in part, prevented in Maryland by the State Faculty library. The country physician hesitates to read a paper before the city society on account of the critical audience. Educational clubs in country districts can help to enlighten and instruct the country physician, and books could be distributed by means of the cottage hospitals, and if there are no such hospitals, then the drug stores may be used as centers. There are nearly four hundred such cottage hospitals in Great Britain, a few in New England, and none in Maryland or the South. In the cottage hospital the country doctor can gain a certain amount of experience in exhibiting and in studying the various cases. He can perform a certain number of autopsies and have the advantage of using the microscope. The first hospital that was established in England was in 1853. There were no trained nurses at that time, but they have become very important now. There is very poor nursing in the country districts. The nurse not only helps the doctor, when in attendance with him, but she acts as subsidiary physician, and pays visits when he can not come. She should be an adaptable woman of good moral tone.

Some say that it would be very difficult to establish such hospitals, but in Maryland with the aid of the Faculty it would not be at all difficult. Assistance could be had from the State treasury, from the County treasury, from private subscriptions and from various organizations. The county medical officer could also act as bacteriologist and pathologist. Thus could be formed a kind of medical society. It would be a sort of university extension teaching, as it were. It would cause a great addition to the membership of the Faculty, and would be a power to command respect to their demands.

Dr. WM. S. GARDNER then read a paper entitled "The Vaginal Operation for Extra-Uterine Pregnancy." He related a series of cases, and showed that while these operations were not at all easy and that the number of cases reported were very small, still the success has been favorable, and it was evident that this was a very practical method of treating extra-uterine pregnancy.

Dr. H. A. KELLY said this matter was extremely important, and that it was one of the more serious and dangerous operation, but when properly done saves the woman from unnecessary mutilation. The operation as formerly done was to tie up the vessels and thus ward off the danger from hemorrhage. Another way was to open the cavity through the posterior vaginal vault, clean out the clots and thus save the patient. But there should be one word of caution to surgeons who do this operation. They must be prepared to open the abdominal cavity and take out all the structures necessary. All of his cases got well but one.

Dr. THOS. S. CULLEN spoke of the "Pathology of Endometritis." This inflammation of the uterine mucous membrane occurs in the acute and chronic stage. The histologic appearance of the epithelium covering the mucous surface is composed chiefly of large nucleated leucocytes; the epithelium is swollen and somewhat distorted. The uterine glands may be normal in part but the mouths of the glands are very much swollen, and there are many pus cells present. In chronic endometritis the mucous membrane is highly granular and has an appearance like polypi. Between the acute and the chronic stages are all transitions. The term granular endometritis is highly improper and should be abandoned. Endometritis is supposed to be very frequent but he has found only forty-nine cases in 1800 gynecologic cases at the Johns Hopkins Hospital. The treatment consists in dilating and curetting the uterus. Dr. Cullen exhibited several drawings.

Dr. HOWARD A. KELLY said that endometritis was exceedingly rare, about only one case in fifty that go to the clinic being really endometritis.

Dr. WM. H. WELCH said that some considered chronic endometritis very common and some rare. It is not uncommon to have variation in the number, shape and size of the uterine glands, and it is not right to call this endometritis even if it is clinically so. These scrapings are not normal, but they are irregular in shape and size and there is a sort of hyperplasia. There are cases with actual change in the stroma with hyperplasia of the stroma cells. As to the value of microscopic diagnosis of the scrapings, this is particularly of value in cancer. Many physicians are careful in risking a diagnosis in examining these scrapings. The negative results do not necessarily convince us, but experience has shown that cancer cells will usually show themselves in the scrapings.

Dr. B. B. BROWNE said that many cases of so-called endometritis got well after curetting, and we did not know what they were until the scrapings were made, that is, we do not make the diagnosis until they have been treated by scraping, so that the diagnosis does not make much difference.

Dr. CULLEN said, in conclusion, that he agreed with what Dr. Welch said; in his cases and a study of specimens found, the scrapings and specimens were hardened in different fluids.

Dr. W. W. RUSSELL then read a paper on "The Treatment of Tuberculosis of the Uterus and Fallopian Tubes," and said that the principal work had been done by Dr. J. Whitridge Williams of Baltimore. He said there were two forms of tubercular salpingitis, one in which the disease is found in the abdominal cavity and in the tubes, and the other in which it is found in the tubes, while the abdominal cavity is not necessarily affected. He had no cases of the first sort and twelve of the second. The uterus is found to be tuberculous in every case in endosalpingitis. If the disease is limited to these organs then the affected tissues should be removed, and the patient's general condition should be looked after, but if tuberculosis is in other parts of the body then it is useless to operate, and when there is dropsy and other symptoms, operation is not necessary. He then spoke of the various methods of removing the ovaries and the manner, whether by the abdominal or the vaginal. By the latter the dissection should be made carefully. He then described the operation in detail. He said that few cases are recognized soon enough to be operated on, and this is true in many of Williams' cases. Diagnosis is made in about one-half of 1 per cent.

Dr. HOWARD A. KELLY then read a paper entitled "Treatment of Fibroid Uteri." He said that rapid strides had been made in doing this operation, and it was but a little while ago that we hesitated to take out these tumors. This operation has gone through several stages in the last fifteen years, for at that time they were removed in a very haphazard way. The abdomen was opened, the uterus was pulled out, the peritoneum was sewed down around the uterus and pinned to it and the stump was left to mummify and slough off. Schroeder, of Berlin, urged us to treat this by creating a pedicle and dropping it back into the cavity with the result of a large mortality from sepsis. Futsch of Breslau, and Kelly of Baltimore, were the first to do the operation in the more modern way to avoid sepsis and hemorrhage. They stitched the peritoneum around the uterus. About this time, Stimson of New York suggested ligating the four sources of blood supply, and after tying these vessels the stump could be dropped back, and there was no sepsis. The technique is important and so is the time. It used to take from one-half to one hour to complete this operation, and then often the patient died. It was necessary to break up the adhesions and tie the vessels, but now the operation can be done in three minutes and the mortality should not be more than 3 or 4 per cent. He referred to two young women who had fibroid tumors, who were both engaged to be married, on which he had operated with success. He bases his remarks on an experience of ninety-one cases. He took out the tumors in these cases and left the uterus, and undoubtedly this can be done in nearly all cases, especially with women in the child-bearing period. He had four deaths in these ninety-one cases, but none in his experience became pregnant afterward. He wears gloves, uses gauze, and looks out for hemorrhage. He urges conservatism in the treatment of these cases, and also as to any operation.

Dr. THOS. S. CULLEN said that one of these cases which died was through his fault and not Dr. Kelly's. In one case which Dr. Kelly operated on she had had four miscarriages. He never does a myomectomy if he finds any evidence of sepsis in the tubes.

Dr. B. B. BROWNE then read a paper entitled "The Removal of Submucous and Intra-Uterine Fibroid Tumors by Enucleation and Traction," in which he mentioned a series of cases and showed results.

SECOND DAY—MORNING SESSION.

The minutes of the previous meeting were read, corrected and adopted, and fifty-two new members elected.

Dr. JACKSON PIPER then read a paper on "Interstitial Pneumonia," in which he related three cases, tending to show that: 1. Interstitial pneumonia, the result of acute pneumonia, is amenable to treatment even after some months' duration; 2. That a consolidation under the second day will terminate either in gangrene or consumption. His conclusions were that it was never well to leave a patient with unresolved pneumonia until all remedies had been tried.

Dr. J. E. GICHNER then made some remarks on

STATE SANITARIA AS A MEANS TO DIMINISH THE SPREAD OF TUBERCULOSIS

and said that the cause of disease is distributed by the consumptives, and that there is no place in Maryland where patients can be exclusively treated and taught how to live. Many cases get well without suspecting infection and the patient tends to recover when given the opportunity to create resisting tissues, and this tends to explain the many cases of recovery. He thought the best results of our labors to cure the disease were to prevent it. Physicians should be sanitarians. There should be a State sanitarium where patients should be treated properly.

Dr. WM. B. CANFIELD said he thought that one point which Dr. Gichner made was especially good, *i.e.*, that patients tended to get well when given the opportunity to create resisting tissues. He had been connected with a small hospital for the treatment of consumptives in the city of Baltimore, and had noticed a marked improvement in cases which had received no medicine, but only food. This hospital is supported entirely by private contributions and receives no city or State aid. There had been treated in the last two years, forty-two cases, and of these, probably one dozen had so far recovered that they were able to return to their former occupations. This hospital is for the treatment of incipient cases only and he would be glad to have physicians throughout the city and State, who had cases of early tuberculosis, notify him and they would receive free treatment.

Dr. GICHNER said in reply that he had purposely not mentioned this institution because of its being a private one and being situated on a dusty street where cars passed, and not in accordance with his ideas.

Dr. JOHN RUHRAEH then made a report of

A YEAR'S WORK IN THE PREVENTIVE TREATMENT OF RABIES.

He said that in the year past, at the Pasteur Institute of the College of Physicians and Surgeons, thirty-five cases had been treated, with no deaths. He was glad to say that the Germans had taken up the Pasteur treatment. Statistics of this institution would be issued yearly. He had divided his cases into three classes: Those bitten by animals which were undoubtedly rabid and proven so by inoculation experiments; those bitten by animals whose condition has been verified by a competent veterinarian; and those bitten by animals which are said to be rabid by others than veterinarians. His cases were principally from the first and third classes. Then it is necessary to classify the cases according to the position of the bite, as to whether the animal bit through the clothing or into the skin directly. If cauterization is to do any good it has to be done within the first half hour, and when done an hour or more later it is perfectly useless. The actual cautery or a hot iron will suffice. Nitric acid is the best chemic agent; nitrate of silver is perfectly useless, yet many physicians use this. There seems to be a great prevalence of rabies in Baltimore and surrounding counties. It seems to occur periodically among animals from time to time. Of the thirty-five cases treated, twenty-five were bitten by animals that were proved to be rabid afterward, and ten by animals so suspected. He then compared his statistics with those of other institutions.

(To be continued.)

Tennessee State Medical Society.

The Sixty-fifth Annual Meeting, held at Jackson, Tenn., April 12, 13 and 14, 1898.

FIRST DAY.—MORNING SESSION.

The session was opened with prayer by the Rev. G. T. Sullivan, pastor of the First Methodist Church, Jackson.

The first paper read was on the

HYGIENE AND MEDICAL SUPERVISION OF PREGNANCY,

by Dr. J. H. Preston of Humboldt.

He believes it to be the duty of the husband to early acquaint his physician that his wife is enceinte and place her under his supervision. Under normal conditions there might be little or nothing for the physician to do but give instruction regarding general hygienic regulations. But under our modern social regime, which is so full of various dissipations, he will sometimes have his hands full in getting instructions carried out. One of the greatest difficulties is in the matter of dress. A great many women are so loath to give up their social relations that they will persistently dress in a manner that is highly deleterious. Some will lace themselves in an attempt to hide their condition, as though their prospective maternity were a crime or disgrace. Moreover, some pregnant women immure themselves from all out-door exercise and fresh air and thus become victims of lassitude, rendering themselves unfit for the ordeal toward which they are tending. The prospective mother should have loose but comfortable fitting garments of medium weight, suspended mostly or entirely from the shoulders, without corset unless it be one especially provided for the pregnant condition. Many complications arise during pregnancy and at time of delivery because of improper dress, which may also have its influence in faulty development of the fetus. We should have a happy cheerful woman during pregnancy to expect a happy uncomplicated delivery of a healthy baby and a safe passage through the puerperal state. Maternal impressions affect the exterior of the fetus as well as its mental organization. The wise physician should aim to direct the mind of his patient as well as her physical welfare. Almost any disease may supervene in the course of gestation, thus engendering a grave complication, or pregnancy may occur and often does in spite of some chronic or inherited disease. Pregnancy may be the exciting cause which arouses some latent disease or predisposition to disease into activity. Besides, there are a number of disturbances that might be termed physiologic phenomena, such as the vomiting of pregnancy, neuralgia of the teeth independent of caries, cough and dyspnea. One of the most fatal diseases in the pregnant state is pneumonia, which can almost always be avoided by proper hygienic care. Diseases of the urinary system call for intervention perhaps oftener than any other class of troubles. Irritability of the bladder and dysuria occur often in first pregnancies, while incontinence is met with more frequently in later pregnancies. Retention of urine in pregnancy is sometimes a very grave accident. It may be attributed to reflex contraction of the neck of the bladder when met with early in pregnancy, but it is most frequently met with as a symptom of retroversion at about the fourth month, or later as a result of cystocele. But the renal function requires most care in the pregnant woman. Four forms of renal disease may be met with in pregnant women, viz., acute and chronic parenchymatous and interstitial nephritis, and a special form peculiar to pregnancy—pregnancy kidney or pregnancy nephritis. The last begins and ends with the pregnant state. The symptoms are edema and albuminuria. The course is usually favorable but eclampsia may supervene with sudden increase of albumin and dropsy with lessened excretion of urine. Acute nephritis may cause eclampsia, but it rarely occurs in the chronic form. For grave albuminuria the absolute milk diet is the best treatment. External palpation of the abdomen after fetal viability may give some information regarding the position of the fetus or multiple pregnancy. Every women in her first pregnancy, or who has had special difficulty in a previous parturition, should be examined by external and internal pelvimetry about the seventh or eighth month. If the labor promises to be long, painful or difficult from obstruction of any kind, the obstetrician ought to know it in advance that he may elect at a proper time before parturition whether to choose the induction of a premature labor, to depend upon the use of the forceps or to resort to podalic version, symphyseotomy or a Cæsarean section and thus avoid craniotomy. Often we are asked if there is no means of making child-bearing easier. The essayist had attended women who had used preparations advertised for this purpose, but had not seen any benefit.

The paper was discussed by Drs. J. S. Nowlin of Shelbyville, T. J. Happel of Trenton, Dr. Forshay, J. F. Griffin of Cronanville and Dr. Preston.

TWO CASES TREATED BY SODIUM INFUSION,

was a paper presented by Dr. W. F. ROCHELLE, Jackson. In the first case there was a temperature of 104 to 105 degrees with heart failure, loss of consciousness and other symptoms of impending death. A quart of saline infusion was injected into the veins and the pulse soon became full and quiet, dropping from 190 to 136 within half an hour. In a few hours consciousness returned and the patient recovered in the course of two weeks. The second case was that of a patient who had suffered about two years with diabetes. The symptoms of diabetic coma supervened. Hereupon some saline solution was injected into the cellular tissues with apparently no benefit. The same solution was then introduced into the veins. The pulse, which had been weak and compressible, became full and strong. The coma disappeared. This continued for three or four hours, when the injection was repeated with the same good result. The injections were continued at intervals of four to six hours for about two days, when the effect gradually failed, the patient grew weaker and died. The subject was discussed by Drs. D. J. Roberts of Nashville, J. B. Cowan of Tullahoma, Miller, J. L. Crook of Jackson, T. J. Happel of Trenton, J. A. Crook of Jackson and the essayist.

Upon motion the Society adjourned until 1:40 P.M.

AFTERNOON SESSION.

"The Pathology and Differential Diagnosis of Intestinal Obstruction," by Dr. RICHARD DOUGLAS of Nashville, was discussed by Drs. Deering J. Roberts of Nashville, W. K. Sheddan, Williamsport, W. D. Haggard, Jr., of Nashville, and by Dr. Douglas.

"Fever, Just Fever," by Dr. D. J. ROBERTS of Nashville, was a description of the peculiar continued fever found especially in the south, which is neither malaria nor typhoid fever, although resembling somewhat these diseases. The paper was discussed by Drs. J. A. Crook of Jackson, Witherspoon of Nashville, J. L. Crook of Jackson, T. J. Happel of Trenton, J. B. Cowan of Tullohoma, J. S. Nowlin of Shelbyville, W. F. Clary of Bellbuckle, W. K. Sheddan of Williamsport, J. D. Hopper, J. F. Griffin of Cronanville, and Roberts.

A PLEA FOR THE CONSERVATIVE MANAGEMENT OF UTERINE INFLAMMATIONS AND DISPLACEMENTS,

Was presented by Dr. I. A. MCSWAIN of Paris. He said: Tubercular and syphilitic infection, rheumatic and gouty conditions, general debility and enemia, may be predisposing causes of diseases and displacements of the uterus. The displaced womb may be only a part of a vast hernia of the pelvic viscera making a decent in various degrees through the pelvic outlet. Dilatation of the stomach, hepatic and splenic enlargements, the growth of tumors or constipation, may contribute to these troubles. The demands of modern society, dress, lacing, the uncomfortable load of skirts fastened around the waist are a fruitful source of uterine disorders. But by far the greater number of these cases owe their origin to negligence or ignorance during parturition or to exposure and bad treatment succeeding labors and abortions, non-observance by the attendant of the rules of antiseptic midwifery, failure to recognize and immediately repair injuries of the birth canal or perineum, and gonorrhea. Subinvolution is more often an effect than a cause. Frequently the puerperal woman gets up too soon after delivery and assumes her household duties, thus exposing her womb to many sources of infection. A flexed womb or one retroverted is in no position for drainage, and by retention of secretions provokes or perpetuates an inflammatory process.

By an examination we should ascertain the presence or absence of inflammatory disorders, the condition of the perineum, the tonicity of the vaginal walls, whether there has previously existed pelvic inflammations, and if so, the nature and extent of the exudates or adhesions, the presence or absence of pregnancy, the size of the uterus, the length of the cervix, the condition of the ovaries, tubes and ligaments, whether there be any displacement of the organ, and if so the direction and extent, also whether the flexion, prolapse or version be due in whole or in part to the presence of tumors or enlargement of any other abdominal organ or is accompanied with prolapse or displacement of the bladder, vagina, rectum or kidney, also whether there be fistulous openings, cervical rents or abrasions, ulcers, excoriations or cancer.

In the treatment of malpositions and inflammatory processes of the uterus we should reduce existing inflammation and overcome if possible the resulting evils and restore the womb to its normal position in the pelvic cavity. The first essential is rest. The patient should be put to bed and kept quiet in both body and mind. This is especially required in all acute cases. The second essential is cleanliness, which implies antiseptic precautions on the part of the physician and nurse, bed and surroundings. The disease must then be treated much as you would any sore, that is, cleanse it. If the os is not sufficiently patulous, it should be dilated with a steel dilator and under an esthetic, every particle of foreign substance should be removed with a curette. Then thoroughly irrigate the uterine cavity with sterile water containing a proper percentage of one of the non-toxic antiseptics. Bichlorid of mercury or carbolic acid, if used at all, should be greatly diluted. Lysol, creolin, permanganate of potash, hydrogen dioxid in proper solutions, or the compound tincture of iodin, one ounce to the quart of water, are all admirable preparations for this purpose and are free from danger. Not every case will require the curette, but there are few, if any, cases of endometritis that do not require thorough irrigation. Having cleansed the organ local applications are in order. Perhaps one of the best combinations is equal parts of the compound tincture of iodin, glycerin and witch-hazel, or carbolic acid and tincture of iodin. Among the newer preparations europhen and aristol suspended in albolene have a soothing and antiseptic effect. There may be cases in which fuming nitric acid or chlorid of zinc is needed, but such cases are few and milder preparations should have preference. The third important step is drainage, which may be accomplished by inserting a drainage tube or a strip of gauze. An important step in securing drainage is to straighten the canal of the uterus. To this end all malpositions should be corrected. This is best accomplished by the use of tampons of prepared wool, which should be saturated with a solution of boracic acid in glycerin and ichthyol and inserted under the fundus, after having raised it from its abnormal position. The woman should then be placed in bed and not disturbed for thirty-six or forty-eight hours, when the wool should be removed, the vagina and uterus again irrigated and the packing replaced with fresh material. Persistence in this course will overcome the ordinary acute cases. The more chronic cases may require in addition massage, electricity, a repetition of curettage and various constitutional measures. In chronic cases with plastic exudation or where the uterus is large and heavy depleting measures are indicated. Hot vaginal douches must be used. Tampons of wool saturated with boracic acid or glycerin should be packed in the vagina and allowed to remain twenty-four hours, followed by hot vaginal irrigation, and the renewal of the packing day after day will hasten resolution of exudates, reduce the size of the womb and materially assist in restoring the parts to a normal condition. One of the best laxatives to secure daily evacuation of the bowels in cases of constipation is equal parts of sulphur, bitartrate of potash and sulphate of magnesia. After having reduced inflammation and its sequelæ and having secured absorption of exudates and the loosening up of morbid adhesions, the uterus may be placed in its normal position and retained by means of a well-fitting pessary. This does not always cure the misplacement, neither ventrofixation nor Alexander's operation. In cases where there are rents in the cervix or perineum repair is indispensable.

The paper was discussed by Drs. T. J. Happel of Trenton, Richard Douglas of Nashville, and by the essayist.

ULCER OF THE STOMACH

Was presented by Dr. J. T. Altman of Nashville. He said: Statistics show us that at least 5 per cent. of all autopsies reveal either an open gastric ulcer or the cicatrix of one that has healed. The etiology of ulcer of the stomach is not very clear, but there are three factors which enter into its production, viz., a local disturbance in the walls of the stomach, whether this be simply nutritional or due to trauma, an embolus or a thrombus; a hyperacid gastric juice, and a diminished alkalinity of the plasma of the blood. Age, sex, locality, occupation, corrosive poisons and alcohol are predisposing causes. The main diagnostic symptoms are pain, vomiting, tenderness on pressure and hematemesis. It is estimated that about 6 per cent. of all cases result in perforation. This is more frequent and fatal when the ulcer is in the anterior wall of the stomach. The differential diagnosis lies between ulcer and chronic gastritis, gastralgia, hepatic colic and cancer of the stomach. When ulcer is suspected put the patient to bed, keep him absolutely quiet and withhold all food from the stomach. Allow no food in the stomach for several days. In the meantime resort to rectal alimentation. Put only albuminous food that has been previously converted into peptones in the stomach at first, so that absorption will take place easily and rapidly and render the physiologic peristalsis and secretion of acid unnecessary. Milk that has been previously peptonized is the ideal food at first. But as this has a bitter taste it soon becomes repulsive, when we may give fresh milk with lime-water or some other alkali. By the end of the second week we may add egg albumin in the shape of raw eggs. In the third week soft boiled eggs with well toasted bread soaked in milk. Thirst is relieved by crushed ice. By the fourth week, if there is no pain or vomiting, raw beef steak finely scraped and raw oysters without vinegar is permitted. From this time a gradual return to a light mixed diet is allowed, but care must be taken for a long time not to eat coarse articles.

Next to rest and diet in importance comes lavage. This is of benefit to relieve the associated gastritis but must be used with caution, taking care never to over-distend the stomach, for by so doing we separate the edges of the ulcer, the granulated tissue is broken down and cicatrization is prevented. Also there is danger of inducing hemorrhage or perforation, unless care is taken to introduce a limited amount and see that it is all carried out. We scarcely ever see a case in which opium is not indicated at some time either to control pain or some complication. The diminished alkalinity of the blood and the excessive acid in the stomach call for the administration of alkalies. Bicarbonate of soda in twenty grain doses before taking food or when in pain acts admirably. Subnitrate of bismuth in half drachm doses also serves a good purpose. Carlsbad salt fulfils the same indications and at the same time keeps the bowels open.

When hemorrhage occurs the patient should be placed in the

recumbent position with the head low. Give morphia and atropia hypodermatically to quiet peristalsis, ergotin to contract the arterioles; apply an ice-bag to the epigastrium. In severe cases apply a ligature around the leg and arm. If collapse is marked inject saline solution into the veins. Perforation demands immediate operation.

As soon as cicatrization is fairly established the existing anemia should be combated by the milder preparations of iron. Three months are usually required for complete cicatrization. Even then relapses may occur.

The subject was discussed by Drs. J. B. Cowan of Tullahoma, J. A. Witherspoon of Nashville, Savage of Nashville, and Dr. Altman.

Evening Session.

The address of welcome, which had been deferred until this time, was delivered by the Rev. C. H. Strickler, D.D. This was responded to by Dr. D. J. Roberts of Nashville, the Vice-president for Middle Tennessee.

Next in order was the President's address: "The Relation of Public Morals to Public Health," by Dr. T. K. Powell of Dancyville.

Second Day—Morning Session.

The first paper of the day was "Puerperal Mastitis," by Dr. C. N. Sebastian of Martin. This was discussed by Drs. T. J. Happel of Trenton, J. B. Murfree of Murfreesboro, J. B. Cowan of Tullahoma, J. A. Witherspoon, D. J. Roberts, J. S. Cain and Richard Douglas of Nashville.

"Observations in Electrotherapy," was presented by Dr. G. P. Edwards of Nashville, and discussed by Drs. Cross, Gillespie, Douglas, Griffin and Edwards.

Dr. S. R. Miller of Knoxville, read a paper on

Transfusion,

The essayist believed intravenous transfusion the quickest and most accurate. It requires more skill than the other methods and more attention to the details of asepsis than the subcutaneous injection or enema, but is to be preferred where there is immediate demand and the necessary preparation is made. It combats shock best. It is perhaps most useful in very bloody operations where otherwise the necessary loss of blood would prove fatal before the operation could be completed. The subcutaneous method is slower and requires less preparation and skill than the intravenous method. It does not depend so largely upon asepsis and should be employed where the intravenous method is not practicable. The introduction of fluid into the peritoneal cavity should be employed only in operations involving that cavity. It is probable that this may prevent to a small degree adhesion of the raw surfaces. Rectal injections are easiest and quickest of application. The essayest prefers this method for the purpose of avoiding rather than to combat shock. It serves best where there is least shock. The general surgeon should not allow himself to become "wedded" to any particutar method but should in each instance employ the one best suited to the individual case and its environments.

The subject was discussed by Drs. J. L. Crook of Jackson, J. S. Cain of Nashville, I. A. McSwain of Paris, D. J. Roberts of Nashville, Jelks and Miller.

"Illustrative Specimens of Perforative Appendicitis, Carcinoma Uteri, Gall Stones and Fibroid Tumors of the Uterus," were presented by Dr. W. D. Haggard, Jr., of Nashville. The specimens were discussed by Drs. Richard Douglas of Nashville, T. J. Happel of Trenton, W. K. Sheddan of Williamsport, J. B. Cowan of Tullahoma, J. A. Witherspoon of Nashville, Jelks of Memphis, J. S. Cain of Nashville, D. J. Roberts of Nashville, and Dr. Haggard.

Afternoon Session.

"Gunshot Wounds of the Abdomen" was a well rounded paper by J. B. Murfree of Murfreesboro. He advised operation (laparotomy) and the repair of the injury done. The subject was discussed by Drs. W. K. Sheddan of Williamsport, Nealy of Memphis, J. B. Cowan of Tullahoma, Richard Douglas of Nashville, and Dr. Murfree.

Election of officers resulted as follows: President, T. H. Marable of Clarksville; vice-president for Middle Tennessee, W. C. Bilbro of Murfreesboro; vice-president for West Tennessee, V. A. Biggs of Martin; vice-president East Tennessee, T. W. Gallion of Dandridge; secretary, W. D. Haggard, Jr., of Nashville; treasurer, D. E. Nelson of Chattanooga.

Next place of meeting, Nashville.

A paper on "Castration for Reflex Neuroses Following Mumps, with Report of Case," was read by Dr. J. S. Nowlin of Shelbyville, and discussed by Drs. J. Roberts of Nashville, J. A. Crook of Jackson, Griffin and Nowlin.

A paper on "Some of the Causes of Unsuccessful Treatment as Ordinarily given for Chronic Suppurative Otitis Media," was presented by Dr. L. B. Graddy of Nashville. Upon motion the discussion of the paper was deferred until the evening session.

Evening Session.

The first item of the program was the discussion of Dr. Graddy's paper, which was participated in by Drs. J. T. Herron, Smith, Savage, Goltman and Graddy.

Dr. John L. Jelks of Memphis, gave a "Report of Surgical Cases," which was discussed by Drs. Happel, Gillespie, Nealy and the essayist.

Prevention and Treatment of Injuries to the Parturient Canal

Was presented by Dr. J. T. Reddick, an invited guest from Paducah, Ky. The paper dealt only with lacerations of the cervix and lacerations of the pelvic floor. Many of the injuries to the parturient canal may be averted by proper attention before and during labor. The urinary organs and bowels should be placed in a healthy condition before labor. Everything done to put the pregnant woman in a normal healthy condition will in a measure prevent lacerations of the cervix and perineal floor. Sedentary and indolent habits, pelvic and perineal irritations, or anything which may impair the nutrition of the pelvic floor, renders it irritable, soft and predisposed to rent. Fashionable women who live indoors, lace tight and wear improper dress, are enervated and and predisposed to lacerations of the pelvic canal. On the other hand, precipitate labors in strong, muscular women, with violent uterine contractions, especially if there is a medium-sized child and a rigid perineum, may rupture the pelvic floor. This may be avoided by complete anesthesia with chloroform. Lacerations may be frequently avoided by supporting the perineum during the second stage of labor, especially if there be a vertex presentation. An overloaded rectum and distended bladder, improper traction in forceps deliveries and the use of ergot, may produce lacerations of the pelvic floor. Hence the obstetrician by personal attention to many little things before and during labor may prevent injuries to the parturient canal. But lacerations do occur with the best physicians and surgeons, and extremely unfortunate is she who has received such lacerations and her attendant is unable or too negligent to detect them and give them prompt and competent surgical attention. Lacerations may be often detected by the educated finger, but to be doubly sure that there are no injuries an ocular examination should be made at once. In laceration of the cervix immediate operation is either one of election or strict necessity. Immediate operation becomes a necessity if the laceration involves the circular artery and the hemorrhage is alarming. Hemorrhage could be controlled by tampons, but the danger from sepsis would be greater than from an operation. Many cases of laceration of the cervix heal spontaneously, especially if the course of puerperium is aseptic, and for that reason the essayist deems it advisable to postpone the operation when possible.

The most important lesions to the parturient canal perhaps are injuries to the pelvic floor. The long train of symptoms which may follow a lacerated perineum, namely, hemorrhage and collapse, infection through an open wound, puerperal septicemia, a tedious and incomplete convalescence, subinvolution, endometritis, uterine displacements of different kinds and degrees, prolapse of ovaries, tubal disease, rectocele, neuralgia, functional derangement of adjacent and remote organs, and innumerable reflex troubles and hysteria, is a living monument to the incompetency of the medical attendant on such cases. About the only contra-indication to an immediate operation is exhaustion of the patient from prolonged labor or post-partum hemorrhage. Where the laceration is slight and requires but a few stitches, anesthesia is generally not required, as the sensibility of the parts is greatly diminished from the pressure associated with delivery. If the laceration is extensive it is best to administer an anesthetic to enable the physician to operate with care and save the woman unnecessary pain. The essayist entered into a description of the operations for the repair of lacerations of the cervix and of the perineum. The paper was discussed by Drs. G. B. Gillespie of Covington, J. L. Jelks of Memphis, T. K. Powell of Dancyville, and J. A. Crook of Jackson. It was then moved that the discussion be continued the following morning.

Third Day—Morning Session.

The session was opened with prayer by the Rev. Dr. Matthews.

The first order of business was a continuation of the discussion of Dr. Reddick's paper, which was taken part in by Drs. I. A. McSwain of Paris, Goltman of Memphis, W. D. Haggard, Jr. of Nashville, T. W. Gallion of Dandridge, Wm. Krauss of

Memphis, Yarbrough, E. W. Ridings of Dixon, Smith, W. K. Sheddan of Williamsport, J. F. Griffin of Cronanville, Jelks of Memphis, W. F. Clary of Bellbuckle, T. K. Powell of Dancyville, and Dr. Reddick.

A SIMPLE METHOD OF ESTIMATING THE SPECIFIC GRAVITY AND HEMOGLOBIN PERCENTAGE OF BLOOD

was demonstrated by Dr. WILLIAM KRAUSS of Memphis. The essayist had constructed a pipette graduated in hemoglobin percentages and used two fluids, one of 1000 sp. gr. at 60 degrees F. and colored with gentian violet, the other of 1060 at 60 degrees F. and uncolored, which would float blood up to 110 per cent. hemoglobin. The specific gravity of the two fluids is sufficiently alike to give uniform variations for temperature, and thus eliminate the temperature error without requiring calculation. The pipette holds 5 c.c. at the 110 mark. This quantity of the clear fluid is measured into a test-tube. A drop of blood is then floated on it. The pipette is filled with the violet mixture and introduced to the bottom of the test-tube and then allowed to discharge its contents which will rise in the fluid, being lighter, and can be seen by its color to diffuse itself in the clear mixture. As soon as the blood begins to recede from the surface, the additions are interrupted until the proper specific gravity is obtained. The hemoglobin percentage can then be read off from the pipette.

The paper was discussed by Drs. J. B. Cowan of Tullahoma, Max Goltman of Memphis, and Dr. Krauss.

"Report of Six Amputations for the Relief of Osteo-myelitis Following Severe Ulceration of the Leg," was presented by Dr. M. GOLTMAN of Memphis, and discussed by Dr. J. L. Crook of Jackson, and by the essayist.

The list of delegates to the AMERICAN MEDICAL ASSOCIATION was then read by the Secretary.

PRACTICAL NOTES.

To Abort Erysipelas.—Lobit uses a 10 per cent. iodoformed or iodoled collodion, with which he has cured twenty-five cases within three to four days.—*Sem. Méd.*, March 30.

Adhesivum is a thick, reddish, aseptic fluid which hardens rapidly in contact with the air and is then insoluble. Poured on a wound it forms a tenacious crust, uniting the lips of the wound and protecting it like a scab.—*Aerztl. Polytech.*, 1897, December 8.

The Success of the Impermeable Alcohol Vapor Compresses is confirmed by Lanz, who has not only cured a number of dermatoses with them, sycosis, acne, buboes, etc., but also reports a case of cutaneous tuberculosis completely cured.—*Sem. Méd.*, April 13.

Orthoform Combined With Arsenious Acid.—The application of arsenious acid in the treatment of epithelial cancer, which Cerny and Trunecek have found so effective (*vide* JOURNAL, xxix, page 83), can be rendered painless by adding an equal amount of orthoform.—*Sem. Méd.*. April 13.

Chloroform Applied to the Abdomen to control spasmodic contractions of the uterus intrapartum. The abdomen is painted with a mixture of one part chloroform to two or three parts olive oil and an air-tight covering applied over it, when the uterine contractions promptly lose their spasmodic character. *Sem. Méd.*, April 13.

Ventilated Shoes.—The disadvantages of the usual close moist leather shoes are obviated by Dr. Spener of Berlin, who has an ornamental design cut through the leather in the upper part of his shoes, to within an inch of the sole. The lining is of duck the same color as the leather and the delicate open-work is not noticeable, while the shoe is practically as waterproof as before.—*Deu. Med. Woch.*, April 7.

Salt Solution in Infantile Broncho-pneumonia.—The injections are followed by an increase in the arterial tension, the heart is relieved, the temperature falls gradually or abruptly, and all the natural emunctories seem to "feel the whip." Ausset agrees with Lépine that these injections stimulate phagocytosis, which explains their action in these cases.—*Nord Méd.*, April 1.

Glycerin Tampon for Inducing Premature Labor.—Wienskowitz carried to a successful termination a case of deformed pelvis in which a previous confinement had resulted in partial rupture of the uterus. A strip of gauze 75 by 1 cm. was dipped in glycerin until it had absorbed 15 c.c. and then introduced into the cervical cavity. Labor pains came on gradually and after thirteen hours the child was delivered alive, thirty-fourth week.—*Sem. Méd.*, March 30.

The Value of Ichthyol in Tuberculosis as a symptomatic and adjuvant of hygienic measures is confirmed anew by Combemale, who has completely cured with it one case of "rapid consumption" and has used it with marked benefit in 120 cases of tuberculosis in the last year, in different stages. It is most effective in the torpid forms, and is counter-indicated and sometimes injurious where there is erethism or fever. It stimulates the appetite, favors the nutritive processes, reduces the cough and builds up the general health, while locally it is an efficient disinfectant. With one to two grams a day the sputa are liquified and disinfected; drying up with larger doses. It is usually administered in pills or capsules just before meals, one to three grams a day, suspended for a while, or combined with two to five grams dermatol if it produces diarrhea, as occasionally occurs.—*Nord Médical*, April 1.

The Technique of Gastrostomy has been so perfected of late that E. Forgue urges not to wait for depressing inanition in fibrous or cancerous constrictions but to make the "gastric mouth" promptly and sustain the patient's strength. He has some cuts in the *Presse Méd.* of March 23, showing two plump individuals placidly feeding themselves milk through the tiny gastric aperture. The gastric mucosa is brought out and sutured to the wound, thus bringing only the lining of the stomach into contact with gastric juice and preventing possible corrosion. The opening is only large enough to admit a 12 or 14 Nélaton sound, which is withdrawn after meal times, when the folds of the mucosa protrude spontaneously closing the "mouth." By operating promptly the patient is saved from possible "Schluck pneumonia" from aspiration and regurgitation of the contents of the stomach, which find their way into the respiratory organs and are a frequent cause of fatal pneumonia in cases of cancerous constrictions. The "mouth" can be used to supplement the usual methods of feeding, and can be readily closed whenever it ceases to be needed.

Restitution of the Posterior Portion of the Urethra With the Soft Parts of the Perineum.—C. A. Ljunggren describes, in the *Nordiskt Med. Arkiv*, 1898, No. 1, his success in two cases of traumatic rupture of the urethra, one recent the other old, with a stricture, abscesses and fistula, resulting from a fall astride a beam. In both there was a gap of several centimeters, which he filled by substituting the soft parts of the perineum sutured around a permanent sound and drained. The sound was removed in twenty-four to thirty days; the urethra healed with a new mucous membrane lining and normal functions and no signs of a recurrence of the stricture since; four and one-half years in the last and two in the first case. He recommends removing all the diseased tissue, leaving a bridge of the urethral wall whenever possible, as it not only hastens the formation of new tissue, but prevents the stumps spreading farther apart, taking stitches also in the extra-urethral tissues. Guyon does not drain even in the infected cases, but Ljunggren considers it better technique to drain for a day or so, while the tissues are most sensitive, and his study of Guyon's published cases confirms him in this opinion, as slight suppuration at first was frequent. The most important point is to leave the medium-sized soft, permanent sound until the healing process is entirely completed. He adds that dilation is unnecessary if the healing proceeds regularly as in his cases, but it should be resorted to at once at the first indication of a stricture or induration around the new-formed urethra. His cases have never required a sound since first dismissed.

THE

Journal of the American Medical Association

PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance $5.00
Foreign Postage 1.75
Single Copies . . . . . 10 Cents.

In requesting change of address, give *old* as well as new location.

Subscriptions may begin at any time and be sent to

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,

No. 61 Market Street (Occidental Buildings), Chicago, Illinois.

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SATURDAY, MAY 14, 1898.

THE HYGIENE OF CLOTHING.

It is probable that man was originally a tropical animal, perfectly adapted to his environment in a physical point of view, the natural product of evolution under the conditions in which he lived. Since he has emerged from his primal state and extended his habitat throughout nearly all latitudes and climates and has become a garment-wearing animal a host of unnatural and insanitary possibilities has arisen. The question of clothing, what to wear and how to wear it, has an importance altogether aside from the social and esthetic, and even from some of the ordinarily recognized considerations of comfort that commonly govern our selection. The hygienic choice of clothing, when it is not interfered with by conventional or economic or other factors, is usually a rule of thumb procedure, that takes little or no account of the chances or consequences of error. This is more especially true in our so-called temperate climates, where every extreme of temperature is experienced, often within the compass of a few days or weeks or in some localities even a day. The result is a sacrifice of human comfort, health and even of human life that is none the less formidable and real because it is unappreciated even by the victims themselves. The average layman's idea of hygiene is ordinarily that it is a matter that concerns diet, water-supply, drainage, etc., and the subject of clothing is one of the very last that occurs to him under this head. The relative importance attributed to these other matters by sanitarians encourages this error, and it may be asked whether, as physicians, we are not guilty of forgetting or condoning some of the commoner sins against good health in this regard; our familiarity with them has led to their neglect. We change our summer and winter costumes, for example, according to the calendar or our individual whims and feelings, and the result is often a crop of lung and bronchial affections and the aggravation of those already existing. According to RUBNER, the most recent writer who has treated the subject systematically, the average man is, as a rule, too warmly clothed in summer, and this, even with good ventilation, is an evil that should be avoided, and tends to increased perspiration and abnormal activity of the skin, which in many ways may lead to evil consequences. With ill ventilated clothing confining the perspiration and its excretions, we have a condition that interprets itself, often to our unaided senses, as hardly more compatible in principle with perfect sanitation than is an undrained cellar sending its exhalations into the living rooms above. The necessary removal of clothing at least once a day relieves matters somewhat, but the betterment is only in degree, not in kind, and is at best only temporary if the same under-garments are resumed the following day. The problem of a proper and thoroughly healthful and comfortable summer costume in our climate adapted to all the exigencies of weather and occupation is certainly a complex one, and it is perhaps too much to expect that it can be perfectly solved. The best we can look for, perhaps, is to reduce the possible evils to a minimum, not to abolish them.

The question of winter clothing is, according to RUBNER, a simple one, the chief demand is for sufficient warmth; the excretory function of the skin is not so actively in evidence and the difference of external and bodily temperature in itself is sufficient to effect or materially aid in such ventilation as is required. The external conditions themselves more directly indicate the needs than is the case in summer, and errors are less likely to be made.

It is in the variable climates of our Northern States that the hygiene of clothing needs most particular attention, and more especially in the changeable weather of the transitions from winter to summer and summer to winter. In the tropics one readily learns how to adapt himself to his surroundings, and as a rule the white race in those regions does not attempt occupations that are unsuited to his conventional costume, at least, for any length of time. In the arctic regions also, the clothing is rationally adapted to the climate, and the freedom from colds and lung disease experienced there is not altogether due to the absence of germs. It is in the middle lattitudes, in temperate regions, with their wide ranges of temperature and changing seasons, that the choice of clothing becomes a serious sanitary problem too often neglected,

but none the less important and worthy the earnest attention of the medical profession. The public is at present left too largely to its own devices as regards this matter, and while the result is not altogether as bad as it might be, it is certainly not an ideal one in a sanitary point of view.

JEALOUSY AS A DISEASE.

The *Lancet*, *British Medical Journal*, and other medical periodicals in Great Britain have lately been discussing the question whether jealousy can be regarded as a disease. Considering the number of physicians who have fallen victims to the morbid jealousy of inebriate husbands when suddenly called to a previously unknown parturient woman, the denial that jealousy can be at times morbid seems absurd.

As SPITZKA pointed out nearly two decades ago ("Insanity: Its Classification, Diagnosis and Treatment"): Delusions of alcoholism relate to the sexual organs, sexual relations and to poisoning. This fact is so constant a one that the combination of a delusion of mutilation of the sexual organs, with the delusions that the patient's food is poisoned and that his wife is unfaithful to him may be considered as nearly to demonstrate the existence of alcoholic insanity as any one group in mental pathology can prove anything. With this there are unpleasant hallucinations. There is this peculiarity of insane inebriates, that their acts are not consistently regulated by their delusions. Thus, one patient may live in comparative tranquility with a wife whom he suspects of committing adultery in the boldest way and before his face night after night. Another under the influence of the same delusions may, in mortal fear of being poisoned in her supposed paramour's interest, kill his wife in a fit of blind fury. These same delusions exist in women. KIERNAN has reported (*Journal of Nervous and Mental Disease*, 1886) two cases in which alcoholic insanity was correctly diagnosed from such symptoms in two American women who had never been suspected of the use of alcohol. Urticaria coincident with dysmenorrhea had led to the popular prescription of gin for this condition and its consequent abuse.

Although morbid jealousy may arise from neurasthenia, neuroses or psychoses taking the direction of the sexual organs especially in the degenerates, still, as just remarked, alcohol is particularly noticeable as a predisposing or exciting cause. Abuse of alcohol produces at first hyperesthesia and then resultant atony of the genital organs and diminishes the power of fecundation and sexual ardor. The genital pathologic lesions in inebriates resemble those of senility. The testicles atrophy, and the spermatozoa disappear. In the female menstrual irregularities occur, followed by amenorrhea. This degeneracy in sexual physiology is, according to STEFANOWSKI (*Alienist and Neurologist*, 1893), accompanied by physical and moral impotence, of which jealousy is a necessary concomitant. According to KRAFFT-EBING, morbid jealousy often occurs among inebriates which may be a part of a general persecutional state or may be a spontaneous phenomena at times. It is interlaced frequently like a red thread with the course of alcoholic psychic degeneration and appears often at the onset of alcoholic intoxication and leads the patients to bloody, sometimes mortal acts, against the innocent victims of their suspicions. KRAFFT-EBING has observed this morbid jealousy in 80 per cent. of inebriates still capable of sexual life. It can be explained as much by extreme enfeeblement of sexual power as by the erotic tendencies still existing. Such an inebriate feeling himself enfeebled in virility commences to have a suspicion, and to inquire, whether his wife have not become unfaithful. This suspicion becomes the point of departure of a morbid jealousy which has but too often fatal results.

Imperfect sexual anesthesia in the hysteric and sexual neurasthenic underlies the morbid jealousy so frequently shown by these. Prescription of marriage to sexual neurasthenics as a cure for their morbid state has sometimes dangerous results for this reason. Doubting their own sexual power, they are sceptical of being the parents of children born to them during the first year of marriage, and hence are victims of suspicions of marital infidelity on the part of their wives. In like cases during climacteric prostatic change, similar suspicions occur. In hysteric females, especially when masturbators, similar psychologic states are often present.

In dealing with the extent, influence, character and suffering from morbid jealousy, the fact should not be forgotten, that modern physiologic psychology denies any essential difference between mental and physical pain, both being species of the same genus. The experiments of OWSIANNIKOFF and DITTMAR prove that pain is accompanied by an arrest of nervous irradiation and spasm of the vasomotor nerves of the brain. MEYNERT interpreting these phenomena from a psychologic standpoint has constructed an ingenious explanation of morbid pain as produced by functional anemia of the cerebral cortex. FÉRÉ's researches tend in the same direction to the opinion that all unpleasing sensation can be resolved into a sensation of feebleness produced by cerebral anemia. F. PAULHAN made a happy attempt to explain all affective phenomena as results of an arrest of tendencies. The jealousy conception should hence be considered as a species of arrest of psychic irradiation. Love experienced for a person can be measured by the place this person occupies in mental life and the rôle, the words and acts of this person play in the organization of habits of thought. Thus are formed systems of ideas

and tendencies which become more and more organized. The unfaithfulness of a loved one is then a disorganization of the person loving, a destruction of the *ego*, an arrest of a great number of systems of ideas and tendencies. As this suffering is produced by real and in no respects delusional causes, it must be regarded as normal. It may however attain such intensity as to be shown in a pathologic manner. This is particularly true of the cases in which the jealous conception does not yield to the action of time but lasts for months and years without enfeeblement as do the delusional conceptions of the insane. In such cases it is impossible to regard the affected person as normal since the intensity and duration of the conception clearly demonstrates its pathologic nature.

The morbid element of jealousy is particularly noticeable and especially dangerous to physicians in cases of late jealousy. These, as STEFANOWSKI has shown, are far from rare in forensic practice.

A man marries a woman who had in her past some gallant adventure. This adventure had not been hidden from him. Knowing already the fault of his future wife, he had pardoned her with all his heart. His love for her was then so strong that to possess her solely he closed his eyes willingly on the past. The woman taught by one bitter lesson has become an honest faithful wife, devoted to her husband with whom she has lived several years without giving cause for suspicion. Nevertheless the husband little by little becomes jealous of the past of his spouse, the fire of his love is extinct and illusion is dissipated under the influence of habit, satiety or monotony of sensation. Jealousy is no longer counterbalanced by generous love, and he commences to hate the unfortunate woman, of whose past he has a conception in which there exists a rival who was happy before him. This rival he can not reach and all his vengeance is poured on the head of his wife, the sole victim of this tardy jealousy.

The dangers to medical men of morbid jealousy of the hyperesthetic type due to alcohol were well illustrated in the death of Dr. F. G. WILDER of Chicago at the hands of an alcoholic traumatic lunatic. The homicide (who had had a sunstroke and sustained a skull injury) was, in consequence, a suspicional lunatic with the periods of pseudo-lucidity common in that type. He became an inebriate and developed the alcoholic delusions described by SPITZKA and KRAFFT-EBING. In consequence he was sent to an insane hospital, whence he was released on parole during a pseudo-lucid interval. He was later liberated by a jury despite the remonstrance of physicians. Six months thereafter he called Dr. WILDER by a telephone message to an alleged patient, met him at the door and shot him dead. During the same year eight attempts at homicide of physicians were made by inebriates laboring under morbid jealousy. In New York city one which was nearly successful was made by an inebriate husband on a passing physician, called to attend a woman, taken in labor on the sidewalk, who had been removed to the rooms of a family strangers alike to husband, wife and physician.

Morbid jealousy has not only its hyperesthesia as just described but also its anesthesia and its paresthesia. These alternating in the alcoholic type with the hyperesthesia constitute a treble danger. The sexual paresthesia of the hysteric is a fertile forensic source of danger to the character of the physician, but the morbid jealousy hyperesthesia is a source of danger to life as well.

CONCERNING ENDOCARDITIS, ITS PATHOLOGIC ANATOMY AND ETIOLOGY.

It might seem as though the study of acute endocarditis had been fairly well exhausted, if one were to judge by the large number of articles of various kinds that have appeared concerning this subject during the last few years. When one reads carefully, however, the recent monograph by FRANCIS HARBITZ,[1] of Kristiania, Norway, concerning endocarditis, its pathologic anatomy and its etiology, he may be agreeably surprised at finding that there are quite a few important clinical as well as etiologic and anatomic points in connection with this disease that have apparently escaped attention, and which could be brought out only by a careful histologic and bacteriologic study of a large series of cases.

HARBITZ passes in review the various phases of the history of endocarditis. He refers to the epoch-making work of BOUILLAUD, who was the first to establish the existence of endocarditis as a distinct clinical entity, and also the first to furnish the necessary anatomic basis. He then refers to the pioneer work of HEIBERG and WINGE, who, in 1869, were the first to establish the presence of microbes in the valvular excrescences and to demonstrate precisely their entrance through external lesions. He then shows that, after the discovery of the various specific micro-organisms, it was not long before many of them were assigned as the causes of infectious endocarditis.

In the description of the methods which he made use of in the study of his cases, HARBITZ lays particular stress upon the necessity of making histologic sections of the valvular vegetations and upon the study of cover-glass preparations in order to control the result of the bacteriologic examination and, finally, he refers to the necessity of comparing the pathologico-anatomic results with the history of the disease.

The classification he makes is founded upon etiologic principles and corresponds to that proposed by HANOT, and many other authors, who divide endo-

[1] Om endokardit, dens pathologiske anatomi og aetiologi, Kristiania, 1897.

carditis into two principal classes, viz.: the infectious and the non-infectious, the latter comprising also those whose probable infectious nature has not been demonstrated.

In the first class are arranged the various inflammations of the endocardium that are due to the presence of streptococci, pneumococci, staphylococci and gonococci. The existence of endocarditis due to the bacillus of typhoid fever is regarded as proved, although it is very rare. On the other hand, he finds that there is hardly enough evidence at hand to warrant the establishment of a tuberculous endocarditis.

In the second class he places the endocarditis of rheumatism, as well as the numerous instances of endocardial vegetations which accompany tuberculosis, carcinoma, Bright's disease, etc.

HARBITZ studied, thoroughly, fifty-four cases. Of these, thirty-nine belonged to the first class, and of this number seventeen were due to streptococci, five to pneumococci, seven to staphylococci, and two to gonococci. Two others are attributed, one to an unknown micrococcus, the other to an unknown bacillus. And, finally, there are included here six cases of infectious endocarditis followed by healing after having passed through the various stages of evolution. Fifteen cases belonged to the second class; five occurred in connection with acute articular rheumatism, seven with tuberculosis, and three with other chronic diseases.

After having made a thorough bacteriologic and histologic study of the infectious forms of endocarditis, HARBITZ finds it convenient, as well from the pathologico-anatomic point of view as from the clinical and etiologic, to distinguish between two great groups of infectious endocarditis. One includes the endocardites which are frequently accompanied by considerable outgrowths, which cover a large surface and which are composed partly of a hyaline thromboid mass and partly of embryonal connective tissue. It is rare to find in these excrescences, round cell infiltration, and there are no necrotic zones surrounding the masses of bacteria. The bacteria are more frequently found toward the border of the thrombotic mass, which they often surround quite completely. In order to demonstrate this relation of the bacteria to the vegetations, it is necessary to make careful sections. The whole histologic and pathologic picture indicates the existence of a limitative process in these cases and not that of a destructive and ulcerative process. In the autopsies upon these cases there were found quite frequently numerous infarcts of the variety which is called pale or anemic and which are free from suppuration. There were no foci of suppuration in any of the other organs. Now, these forms of endocarditis are in the majority of cases caused by the streptococcus and pneumococcus, and these bacteria are present, as stated, most often in huge masses. In general it is not possible to find any evidence as to the source of the bacterial invasion.

These forms of endocarditis present also certain striking peculiarities from a clinical point of view: their beginning is often insidious and their progress slow. There may be six months, and even one or two years, from the beginning of the disease while it comes under observation. Many of the cases appear to begin by cerebral embolism. In a certain number of the cases there was observed a slight fever of an indefinite type, and sometimes the joints would present symptoms that resembled very much the articular phenomena of acute rheumatism. Some of these cases also manifested marked renal symptoms, sometimes presenting the clinical picture of a hemorrhagic nephritis, due in part, perhaps, to mechanical disturbances in the circulation of the kidney on account of the valvular heart disease, although more likely to infectious or toxic agents.

As a supplement to this group HARBITZ describes certain cases of infectious endocarditis that heal spontaneously, in which there were large outgrowths upon the endocardium of the valves, as well as of the auricles and ventricles, but in which cultures remained sterile while the microscopic sections showed indistinct and degenerated bacterial masses at the borders of the vegetations. Judging by the appearances and by the resemblance of these cases to those already described, the author considers it very probable that these instances were cases of streptococcus infection. He believes that he has demonstrated the curability of infectious endocarditis. In these six cases there were also symptoms of infectious and toxic nephritis.

The second principal group of infectious endocarditis is formed by those cases in which the endocarditis represents part and parcel of a general pyemic process. These cases correspond to the clinical picture of malignant endocarditis. The lesions are most often ulcerative and destructive, and here one finds a necrotic zone around the bacterial masses, a marked round cell infiltration, and at the same time there will be found multiple suppurative foci here and there in the body, and also infarcts that are most often infected. These forms of endocarditis are most often caused by staphylococci. External lesions serve as the infection atrium and the evolution of the disease is rapid.

In two cases of infectious endocarditis the author found micro-organisms that morphologically and from the staining characteristics corresponded to the gonococcus. He was unable to cultivate them. After referring to the cases of gonorrheal endocarditis described in the literature, including that of THAYER and BLUMER,[2] HARBITZ concludes that it concerned here most likely the gonococcus.

[2] Archiv. de méd. experimentale, 1895.

HARBITZ describes the endocarditis of rheumatism as characterized by small verrucose vegetations, which appear by preference to affect the endothelium over the free border of most of the valves and which remains strictly circumscribed in these localities. When such vegetations are examined while fresh they are found to consist of a hyaline thromboid substance, at the base of which there is a small mass of embryonic connective tissue. Bacteria are not found in cover-glasses, cultures, or sections. After reviewing the literature of acute articular rheumatism as far as it bears upon etiology, he comes to the conclusion that rheumatism can hardly be considered as a specific disease, but rather as resulting from the action of various pyogenic microbes of a feeble virulence. This is also the opinion of SAHLI and others. In support of this statement various cases are cited of fever and articular swelling connected with local suppurations. Now, as regards rheumatismal endocarditis, HARBITZ submits that this may be due to the same attenuated microbes, which act either directly by implantation upon the endocardium or indirectly by the excretion of toxic products which circulate in the blood. By the production of a superficial necrosis of the endothelium of the valves along the line of closure, which is the part most exposed to traumatism, there results a precipitation of thrombotic material from the blood, followed by a proliferation from the substance of the valve.

HARBITZ looks upon this pathogenesis as the one most likely also for the small verrucose excrescences which so often accompany tuberculosis, cancer, Bright's disease, etc., where the bacteriologic examination gives a negative result. In Bright's disease, for instance, it lies very near at hand to assume that the abnormal substances circulating in the blood may readily injure the endothelium. HARBITZ was not able to find tubercules or tubercle bacilli in the endocardial excrescences in cases of tuberculosis in various parts of the body. On the other hand, by inoculating one of the vegetations into a guinea-pig, he obtained, in one instance, positive results, but it may be that this was due to the implantation of tubercle bacilli circulating in the blood upon the vegetations.

Finally, it is to be noted that a number of animal experiments were made, in which he succeeded in producing an infectious endocarditis by the intravascular injection of different bacteria. On the other hand, injection of sterilized cultures did not produce any lesions of the valves.

THE BOYS OF NINETY-EIGHT.

In our issue of last week, in discussing the President's call for volunteers we deprecated the acceptance of minors for service. The country is populous and can easily furnish the required number of well developed and hardy men. Were the war prolonged as was the civil war it might be needful to call the young men from their schools and colleges; but in the inception of a war this is not necessary and does not seem to be advisable. The boys are full of the war spirit and are anxious to be at the front; but the fatigues and exposures of active service would soon send them to the rear again, with, in many instances, the prospects of their lives destroyed. We cited approvingly the regulations for enlistment in the regular army which made twenty-one years the mininum age for acceptance into service; but while we were writing that approval an order was in preparation and has since been issued by the War Department making the mininum for enlistment in time of war eighteen years instead of twenty-one, as heretofore in times of peace. These requirements are alike opposed to the teachings of physiology and military experience. They should have been reversed. There is no objection to enlisting growing youths in times of peace as their years of service would be practically a course of athletic training and military discipline which would have a value in their future; but there are serious objections to calling them into the ranks in times of war while the country has able-bodied men available for service.

THE JOURNAL ON ITS TRAVELS.

A rather battered copy of the JOURNAL of March 20, 1897, arrived in the editorial room this week from Cape Town, Africa, having left that city April 4, 1898.

It was accompanied by the following letter from the accomplished editor of the *South African Medical Journal:*

CLAREMONT, CAPE TOWN, S. AFRICA, April 4, 1898.

The Editor JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Chicago.

Dear Sir:—I forward to you by this mail your JOURNAL of March 20, 1897, which is quite a curiosity.

Until quite recently it was my custom to pick out from among my correspondents a few of those likely to be especially interested in any medical journal I might receive and to send the journal to them in rotation, one forwarding it on to the other.

To illustrate this the accompanying JOURNAL has drifted back to me after the following journey:

1. Dr. Welby, Colonial Surgeon, Island of St. Helena
2. Dr. Moffat, Chief Medical Officer, British East Africa, Warsinde Station, Varyoro, Uganda (the station is somewhere near Lake Victoria Nyanza).
3. Dr. Haw, Bartelson, Transvaal.
4. Dr. MacFarlane, scribe Basulaland.
5. Dr. Robertson, Johannesburg, Transvaal.
6. Dr. Leicester, Port Elizabeth.
7. Dr. Howard, Port Nollarth, Namaqualand.
8. Dr. Eyre (myself).
9. Dr. Fuller, Cape Town.

This round has taken some little less than a year. If you will trace this route on the map and think that the article sent was only a book packet you will, I believe, realize that it is not uninteresting, an instance of postal perfection as well as a gratifying proof of the obligation of the professional bond felt by many personally totally unknown one to the other.

* * * * * * *

[Signed] Yours faithfully, GEORGE G. EYRE.

We feel gratified that through the courtesy of Dr.

EYRE, the representative American medical journal has thus passed through the hands and met the eye of our colleagues in darkest Africa, and we trust that the casual acquaintance with the writings of our American medical men thus begun may ripen into closer reciprocal relation. May the African pioneer medical men live long and prosper, and may the *South African Medical Journal* long flourish!

THE JOURNAL SPECIAL TRAIN TO DENVER.

The JOURNAL SPECIAL TRAIN will leave Chicago, Saturday, June 4, at 11 P.M., via the Chicago, Burlington & Quincy Railroad, arriving in Denver Monday morning 7 A.M., in time for the meeting of the American Academy of Medicine, the American Medical Editors' Association and other medical organizations holding sessions on Monday.

The "Special" will run through. Tickets will be good for thirty days. The rate will be one fare and $2 for the round trip, the most favorable rate yet granted the ASSOCIATION.

CORRESPONDENCE.

Wyman's Method.

STATE BOARD OF HEALTH OF KENTUCKY,
EXECUTIVE OFFICE.
BOWLING GREEN, KY., May 2, 1898.

To the Editor:—In the April 1 number of "Health Reports," published by the United States Marine-Hospital Service, the statement was officially made that, during the recent epidemic of smallpox at Middlesboro, national aid was sent to this State at the request of this Board and of Governor Bradley, and that the representative of that Service found the methods of this Board inefficient. As the epidemic was practically under control at the time of the unwarranted interference of this Service, and as their interference was wholly uninvited, I at once wrote the Supervising Surgeon-General asking that the false and unjust statements be corrected. As he has declined to make this correction, and as this Bureau is the chief obstacle to the enactment of efficient national legislation for the protection of the public health interests of the country, I ask that the subjoined correspondence be given a place in your columns, that health officials and the profession may know what to expect at the hands of this Bureau should its persistent requests for increased power be granted. Very respectfully,

J. N. MCCORMACK, Secretary.

EXECUTIVE OFFICE,
BOWLING GREEN, KY., April 9, 1898.

Dr. WALTERS WYMAN, Supervising Surgeon-General United States Marine-Hospital Service, Washington, D. C.

Dear Doctor:—I write to correct a mis-statement made in the current number of your Public Health Reports to the effect that this Board, the Governor of Kentucky or anyone else having authority to do so, asked for national aid in suppressing smallpox at Middlesboro. The request was made by Representative Colson, who had no authority in the matter whatever, as you must have known. When your representative arrived the disease was under control, and a speedy termination of the epidemic was confidently expected, as he reported to you when he asked to be relieved. You ordered him to stay but, under his instructions, he refused to co operate with us or do anything unless given absolute control, and by reckless statements made to certain citizens as to government funds available if he got this control, so confused our efforts to get money from the county, which was amply able to raise it, that our Board withdrew and the State was forced to accept a co-operation from your Service it had never sanctioned or needed. We hesitated to give you absolute control because of the ineffectual methods adopted by your Service in Alabama which had permitted the present epidemic in Tennessee and Kentucky, and of its similar history in former years in dealing with yellow fever and smallpox. After our inspectors left, your representative found that he had no authority to assume charge. Our quarantine was continued in force to protect the rest of the State but no one had charge in Middlesboro for almost a week, and the disease made such headway that it has required over a month to bring it under control to the same degree as when we left. With all due respect to you and your Service we are satisfied that your interference was unauthorized and unwise, and ask that this correction be given place in your next issue. With assurances of personal regard,

Very respectfully, J. N. MCCORMACK, Secretary.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL
MARINE-HOSPITAL SERVICE,
WASHINGTON, D. C., April 13, 1898.

DR. J. N. MCCORMACK, Secretary State Board of Health:

Dear Doctor:—In reply to your letter of April 9, 1898, in which you request a correction of alleged mis-statements made in the current number of the Public Health Reports regarding smallpox epidemic in Middlesboro, I have to say that the statements in said Public Health Reports are verified by the records of this office, which show that not only the Governor of Kentucky and a member of Congress for the District including Middlesboro, and the president and secretary of the State Board of Health of Kentucky, requesting national aid in suppressing the epidemic of smallpox at Middlesboro, but that a similar request was also made from the Mayor of Middlesboro; so that your request for a correction was evidently made under a misapprehension of the facts.

Contrary to your assertion, no instructions were given to Dr. Wertenbaker to refuse to co-operate or do anything unless given absolute control.

You are equally in error in regard to the success of the Service in the methods adopted for the suppression of the epidemic in Alabama, as the Service never assumed charge of smallpox throughout the State of Alabama, its operations being in Birmingham and vicinity.

With regard to the history of this Service in dealing with yellow fever and smallpox in former years, it is only necessary to call your attention to the Annual Reports of the Service, as well as the Public Health Reports, to prove the incorrectness of your statement. Respectfully yours,

[Signed] WALTER WYMAN,
Supervising Surgeon-General, M. H. S.

EXECUTIVE OFFICE,
BOWLING GREEN, KY., April 20, 1898.

DR. WALTER WYMAN, Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

Dear Sir:—I regret very much that you feel it necessary to make the statements contained in your letter. Your records can not show that the officers of this Board or the Governor of Kentucky asked you to send any one to Middlesboro for the very simple reason that they did not do so. After Dr. Wertenbaker was sent without official invitation, he reported to you that we had the epidemic under control, that no inter-State question was involved, and asked to be relieved. You ordered him to remain for reasons best known to yourself, until his presence, and your promise to furnish funds, demoralized the local officials, who had from the first objected to bearing the expense properly imposed under our statutes. Under a gross

mis representation of the facts the president of this Board and the Governor were induced to ask your Service for aid, and I withdrew our inspectors when it was found that Dr. Wertenbaker had no authority to do anything. Chaos reigned for several days, hundreds were exposed and the epidemic was again on, and was only prevented from reaching serious proportions by the systematic vaccination done by us before your interference. I have no means of knowing what instructions you gave Dr. Wertenbaker, but he stated in a public meeting, and often in private, that he could only co operate with us upon condition that he was given absolute control.

As you refuse to make the correction demanded alike by the facts and fair dealing, I will be forced to take my own methods of doing so.

Respectfully,

J. N. McCORMACK, Secretary.

Appendicitis.

NEW YORK CITY, May 8, 1898.

To the Editor:—There have been no responses in the JOURNAL in answer to my request in a February number, asking correspondents to oppose the idea that appendicitis cases require operation as soon as the diagnosis has been made. Several references to my request have been made in other medical publications, however, and one which appeared as an editorial in the March number of the *Texas Medical News* covers the ground of the oppositionists so well that I have asked the editor of the *News* to allow me to answer in the JOURNAL, because that was the medium which I chose originally for the discussion. (I have italicized the parts of the republished *News* editorial which are answered *seriatim.*)

EDITORIAL ARTICLE.

"There are always to be found men occupying *extreme positions* in every profession. This is especially so in medicine and surgery. Men, too, of learning and influence, teachers and authors, whose teachings and example are quoted and followed by men of less positive character. We feel that we are guilty of no exaggeration when we assert that such men have been in the past, and are yet, dangerous elements in the medical profession. They are a menace to the well-being of society. We are forcibly reminded of this fact by a letter from Dr. Robert T. Morris, in the February issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, on the subject of operation in appendicitis. The clear inference which may be drawn from the letter is that operation should be resorted to without delay as soon as the diagnosis is made.

"We repeat that such extreme radical teaching by influential members of the profession, such as Dr. Morris, is well calculated to do great injury, by *precipitating an epidemic of laparotomies* by a large class of surgeons who always follow their leaders, and always consider themselves safe from adverse criticism as long as they are fortified by 'authorities.' Similar teachings a few years ago, precipitated upon the unfortunate women of this country an epidemic of operative procedure for the relief of *ovarian disease*, and there is not a doubt but that thousands of healthy ovaries were thereby sacrificed to the sinister teaching of a few leading members of the profession. We are glad to know that conservative surgery has at length placed a check upon this needless sacrifice of the procreative faculties of women, and the great pendulum of public opinion is moving in the opposite direction. And so it will prove, we trust, in operations for appendicitis. *Conservatism* will assert its influence and power, and *nature will first be given a chance*, assisted by the intelligent efforts of the physician, to remove *trifling ailments* in and about the appendix, before the peritoneal cavity is invaded by the surgeon's knife. We know from our own experience and observation that *a great majority of such cases recover without operation*, and we earnestly exhort the members of the profession to use *their own judgment* in every case of appendicitis as to the propriety of operation. We notice in the communication of Dr. Morris, above alluded to, an apparent *intolerance of the opinion, and even of the truthfulness*, of other members of the profession, which we think sadly out of place in the discussion of a subject involving as it does the lives and welfare of the people. Infallibility must not be credited to any one, and experience from every source upon this important subject is valuable to the profession, and should not be captiously objected to or rejected because it does not accord with our own opinions or experience."

ANSWERS.

1. *Extreme positions.*—It makes a difference whether an extreme position is based upon knowledge or upon theory. The subject of appendicitis is so thoroughly understood by a part of the profession, and the data are so well classified, that we can now maintain the extreme position that operation should be done as soon as the diagnosis of appendicitis has been made. In diphtheria we take the extreme position that every case of true diphtheria should be isolated, because of the danger of its infecting other patients. In appendicitis we take the extreme position that the infected appendix should be isolated because of the danger of its infecting other structures. It is not a question of theory so much as a question of fact.

2. *Precipitating an epidemic of laparotomies.*—This is a matter for which society is responsible. The teaching is not at fault. If society allows badly educated men to graduate from medical colleges, and poorly equipped men to operate for appendicitis, to society must come the consequences.

The teaching of a correct surgical principle should not be abrogated on the ground that many improperly prepared men will try to carry it into effect. Judges know how many legal cases are lost for clients, because lawyers prepare the cases improperly for trial, but the judges do not argue that principles in law should not be taught to all classes of lawyers.

3. *The epidemic of operation for diseased ovaries.*—That again was a case in which correct principles were taught, and unprepared men often tried to carry them into effect. The careful, conscientious, educated gynecologist is a trustworthy man, and in him the good people may repose confidence. The responsibility for pendulum movements lies chiefly with the sort of people who do not choose the careful, conscientious, educated gynecologist or surgeon when wise counsel is needed.

4. *Conservatism in treatment of appendicitis.*—I would call the attention of philologists to the curious use that is made of the word "conservatism" as applied in appendicitis controversies. "Conservative treatment" is understood to mean medical treatment during a part or the whole of an acute attack of bacterial infection of the appendix. The death rate in appendix treated by medical means alone has been shown to amount to more than 10 per cent. in primary attacks, and more than 25 per cent. eventually. The death rate in appendicitis under proper surgical treatment at the proper time has been shown to be less than 1 per cent. at the hands of several American surgeons, but this is curiously enough known as "radical treatment" in contradistinction to "conservative treatment" with its high death rate. The suffering caused by bacteria during "conservative treatment" is much greater than the suffering caused by "radical treatment," if we may judge from the testimony given by a series of patients whose answers to questions are to appear in a forthcoming number of the *Medical Record.* The loss of time to the patients is greater under "conservative treatment" than under proper "radical treatment." We hear a good deal about treating cases "conservatively until operation is required." This phrase usually means that the cases are to be allowed to drift into such complications that the patient may be expected to suffer from the results of complications after the operation has been done.

Philologists then will please take note on the curious use of the word conservatism as it has come to be applied in appendicitis controversies. If the philologists wish to know the reason for this use of the word, I will remind them that conservatism takes the place of knowledge, that a large part of the profession is uninformed upon the subject of appendicitis, that the word "operation" has more disagreeable suggestions than the word "bacteria" unless one is fully informed upon both subjects, and that the very busy physician is in such demand by his patients that it is a physical impossibility for him to man-

age the unwieldy sum-total of our advanced medical knowledge of today. The outlook is more and more hopeless unless we can some day have a medical tribunal or clearing house, for classifying that part of our knowledge that has become scientific, and obstructing the publication of crude controversial articles which confuse the busy physician who is eager to be upon the the right side.

5. *Giving nature a chance.*—A chance to do what? To raise a thriving colony of bacteria or to destroy them with polynuclear leucocytes in the interests of the man? Nature presumably cares no more for a man than she does for a fine nest of growing bacteria. Both are her possessions. She wishes to have both of them survive. She has equipped both of them with means for offense and defense. When there is a struggle for supremacy and nature does not seem to know which side to favor, the well informed patient chooses a skilful surgeon for his ally, and nature is not given a chance to cultivate her bacteria at the expense of a beloved father, or mother, or sister, or brother. It is a pretty conceit on the part of man, this assumption that nature cares more for his welfare than for the welfare of a progressive thriving colony of bacteria. It is parallel to the idea that man must be a special creation.

6. *Trifling ailments about the appendix.*—None of my remarks apply to the matter of trifling ailments about the appendix. They apply only to cases of true infective appendicitis in which bacteria are injuring the tissues, and in which the physician possesses sufficient diagnostic acumen to know what is going on.

7. *Majority recover without operation.*—About 75 per cent. of appendicitis patients are believed to recover without operation (See "Lectures on Appendicitis," Second Edition), but at what cost? At the cost of risking a death-rate of 25 per cent. which need not be 1 per cent. At the cost of more suffering, and more loss of time, and more chronic ill health than any one within reach of the resources of modern civilization need suffer.

8. *Members of profession to use their own judgment about propriety of operation.*—Within a month I have seen two cases in which the free abdominal cavity was filled with pus, and in which some of the consulting physicians thought that symptoms did not warrant operation. Within a year I have seen at least six cases in which the appendix was the focus of tuberculous infection which was extending to peritoneum and neighboring bowel, and yet the symptoms were so mild that several consultants had advised against operation. I have seen a case of cancer of the appendix in which consultants were not at all agreed that the symptoms were sufficient to warrant operation, until the cancer had reached an incurable stage. Within a year I have operated upon perhaps twenty-five cases in which perforation of the appendix had already occurred, and in which some of the consultants thought that the symptoms were those of "catarrhal appendicitis" only. Shall we then let members of the profession all use their own judgment, or shall we ask the men who are thoroughly familiar with the subject to teach principles and make rules for aiding those whose opportunities for gaining accurate information have been more limited. Human life is directly at stake in this matter. Physicians are directly responsible, because trusting patients place their lives, their hopes, their all, in the hands of physicians who are not at all prepared to take such sacred responsibilities.

9. *Intolerance of opinion of others.*—I am tolerant of the opinion of every man who tries to obtain his facts in a scientific manner. I am intolerant of the opinion of any man who becomes intoxicated by the spirit of controversy, and who tries, when in that condition, to mislead himself and every one else. I have not questioned the truthfulness of any physician who has published lists of appendicitis cases cured by medical treatment, but have simply charged such authors with being slovenly and careless while they were intoxicated with the spirit of controversy. I have been, and shall be, upon the watch for all such published lists, and shall expect to find in the future, as I have in the past, that a very little cross-questioning is disastrous to the authors of lists of "cured cases." They will be requested to give us the time during which appendicitis patients have been watched, the number of recurrent attacks, the number of deaths, the number of patients who subjected themselves to operation, and the length, breadth, position and condition of the appendices as determined by palpation in the interval between attacks. Patients will not be considered to be cured because they did not return for treatment.

The particular author whom the editor of the *News* suspects has been charged with untruthfulness, published a long list of cases of appendicitis cured by medical means, and when I challenged the accuracy of his report he admitted that he did not know what had become of most of the cases. I learned shortly of three of his cases that had subjected themselves to operation, of one that was carrying a chronic pelvic abscess from appendicitis. Another one of the patients came to my office because the symptoms had recurred, and the case proved to be one of loose kidney, with the kidney in the appendix region. The appendix was normal.

I did not charge this author with being untruthful, but simply intimated that he was intoxicated with the spirit of controversy, and when in that condition he was slovenly in making up his report. Hundreds of physicians and laymen are misled by such reports. The farce tragedy has been played long enough. Human life is directly at stake, and I propose to call to acccount physicians who insist upon trying to mislead themselves and others. Call it intolerance if you will, but I have no motive excepting that of being useful to the profession to which I have sworn allegiance, and there will be no intolerance manifested toward the author of any paper which takes into account our classified knowledge on the subject of appendicitis, and which bears the ear marks of that degree of care which is required in reporting upon a subject which directly involves human life.

49 West Thirty-ninth St. ROBERT T. MORRIS, M.D.

Air is Food; Nitrogen; Correction.

NEW YORK CITY.

To the Editor:—In your issue of Feb. 12, 1898, there were omissions in "Air is Food; Nitrogen": page 365, column 1, lines 46 to 52; page 366, column 1, lines 1 to 5, 6 to 9, 16 to 20, 25 to 29, 34 to 39. These were quotations from the late Dr. W. Thornton of Boston. My explanation is that said quotations were in Prof. W. B. McVey's contribution and that I did not know they were Dr. Thornton's. Professor McVey says that he thought he had given credit. As he is now investigating N. on these lines, it is to be hoped that Dr. E. C. Hebbard of Boston (who kindly brought the matter to my attention and whom I thank), and all who feel that N. is not given its due dynamic influence, will work together, especially now when the whole world has been startled by the blowing up of the *Maine*, which would have been impossible without nitrogen.

Yours truly, EPHRAIM CUTTER, M.D.

Location of Intestinal Obstruction.

LA GRANGE, ILL., May 7, 1898.

To the Editor:—Supplementary to the suggestion of a "Simple and Safe Method in Determining the Location of Intestinal Obstruction," by R. S. Reed of Wheeling, W. Va., I call the attention of the writer to the curious fact, pointed out by Nothnagel of Germany, that when a crystal of carbonate of soda is applied to the peritoneal surface of the intestines, it will invariably excite its contraction and which passes upward toward the stomach, antiperistaltic; never toward the rectum. But one opportunity to test this has been afforded me, which, however, corroborated the assertion of Dr. Nothnagel.

F. A. SCHMIDT, M.D.

ASSOCIATION NEWS.

The Denver Meeting.

Announcement.—The following arrangements have been made for the Denver meeting of the AMERICAN MEDICAL ASSOCIATION:

Section Dinners will be given June 7, at 7:30 P.M., and social entertainments will be given on other evenings during the week.

Ladies' headquarters will be at Unity Church, where they will be received by the wives of physicians of Denver. Arrangements have been effected for their entertainment during their visit, and committees will escort the visiting ladies to the various points of interest in Denver.

On Friday June 10, a complimentary excursion to Idaho Springs and around the loop will be given by the Colorado State Medical Society. At Idaho Springs, the ASSOCIATION will be entertained by the citizens.

On Saturday, a complimentary trip will be made to Colorado Springs under the auspices of the Committee of Arrangements. At Colorado Springs the ASSOCIATION will be entertained by the local physicians and citizens. Visits will be made to all points of interest in the vicinity. Arrangements will be made for trips to Pike's Peak and the celebrated mining camp of Cripple Creek at low rates of fare.

At a date to be determined, special trains for Glenwood Springs will leave Colorado Springs via The Denver and Rio Grande Railroad and the Colorado Midland Railroad. Tickets $5.00, good going via one railroad and returning the other, and for ten days from date of issue.

The trip to Glenwood is one of the most attractive in Colorado, giving excursionists a view of some of the finest scenery in the Rocky Mountains, including Pike's Peak, Ute Pass, the Valley of the Arkansas, Hagerman Pass, Canons of the Roaring Fork and Frying Pan, Canons of the Grand and Eagle Rivers, Tennessee Pass and the Royal Gorge of the Arkansas and passing through the cities of Pueblo, Leadville, Canon City and Florence.

Special Hotel rates will be given by the Hotel Colorado and other Hotels of Glenwood Springs. The springs, baths and swimming pool will be free to the ASSOCIATION.

Special cars will be hauled on the Colorado Springs train and the Glenwood Springs Special, only when handed to the railroads with their full capacity.

Railroad Rates.—As previously announced, the Western Passenger Association (including all lines running between Chicago and Denver) has granted a rate to Denver and return of one-half fare, plus $2, thirty-day limit, for business from Chicago, St. Louis and intermediate points. Tickets on sale June 2, 4 and 5 east of the Missouri River; June 5 and 6 west of the Missouri River.

The same rate is announced by the Frisco Line, the Missouri, Kansas and Texas Railway and the Fort Worth and Denver City Railway.

The Central Passenger Association have agreed to adopt the rate of the Western Passenger Association throughout the territory covered by their lines, and formal announcement is expected shortly.

From Ogden and Salt Lake, the round trip rate of $20, thirty-day limit, will be in force.

The rate of one fare for the round trip from the common points, Pueblo, Colorado Springs and Denver, to points in Colorado is also announced.

Excursion tickets to Salt Lake and Ogden will be on sale at Denver on the closing date of the meeting and on the two days following, good to return twenty days from date of sale. Stopovers will be allowed within a transit limit of ten days. Rate $18.

Rates over other lines will be announced as soon as determined.

COMMITTEE OF ARRANGEMENTS.

Section Dinners.—The following Section Dinners will be given at the Denver meeting of the AMERICAN MEDICAL ASSOCIATION on Tuesday, June 7, at 7:30 P.M.:

Practice of Medicine, Metropole Hotel.

Surgery and Anatomy; Obstetrics and Diseases of Women; Ophthalmology, Brown Palace Hotel.

Laryngology, L'Imperiale Hotel.

Materia Medica, Pharmacy and Therapeutics; Cutaneous Medicine and Surgery, Windsor Hotel.

Diseases of Children, The Albany Hotel.

Neurology and Medical Jurisprudence, University Club.

Stomatology, St. James Hotel.

In order that satisfactory arrangements may be made for dinners, it is essential that all members who expect to be present notify the Chairman of Committee on Section Dinners as soon as possible and not later than June 4.

E. C. RIVERS, Chairman,
16th and Stout Sts., Denver, Colo.

Railroad Rates for the Denver Meeting.—The Committee on Transportation, appointed at the Philadelphia meeting, consisting of Drs. H. L. E. Johnson of Washington, D. C., Charles A. L. Reed of Cincinnati and Henry D. Holton of Vermont, have been very active in their endeavors to secure a one fare rate with diverse return route and thirty days limit, to the members of the ASSOCIATION. The western roads have been late in promulgating their action to the other Railroad Associations, and the Central Traffic and Trunk Lines Association will not act until Tuesday, the 11th, instant, after which the Transportation Committee, which has co-operated with the Denver Committee of Arrangements, will make their report through the JOURNAL. The Pennsylvania road is in full sympathy with the rate movement of the physicians and it is working in the Trunk Lines Association to secure the rate desired. In securing reduced rates in the East, the Committee has had to face the fact that the ordinary rate per mile is less than the mile rate in the other passenger territory, hence the one and a third rate granted in the East is practically the half fare rate of the West. The Committee expects, however, to be able to report the one-fare rate, for the Denver Meeting.

H. L. E. JOHNSON, Chairman Transportation Com.

Hotels.—The following is a list of the principal hotels of Denver with the rates agreed upon for the meeting:

The Brown Palace Hotel, 17th Street and Broadway. Take 17th Street (red) car to Hotel. European plan, $1.50 per day and upward.

The Windsor Hotel, 18th and Larimer Streets. Take 17th Street car to Larimer Street. American plan, $2.00 per day; room with bath, $2.50 per day.

The Albany, 17th and Stout Streets. Take 17th Street (red) car to Hotel. American plan, $2.00 to $3.50 per day.

The Markham Hotel, 17th and Lawrence Streets. Take 17th Street car to Hotel. European plan, $1.00 per day and upward.

All reservations at the Albany and Markham must be for the full term of the Meeting, and be paid for whether occupied or not unless canceled ten days in advance. They reserve the right to place persons occupying a room alone in a single room.

The New St. James Hotel, Curtis near 16th Street. Take 17th Street (blue) car to Hotel. American plan, $2.00 to $3.50 per day.

L'Imperiale, 14th Street and Court Place. Take Colfax Avenue car to Court Place. American plan, $2.00 to $3.00 per day.

Metropole Hotel, Broadway near 17th Street. Take 17th Street (red) car to Broadway. European plan, $1.00 to $2.00 per day. $1.00 rooms, $1.50 if occupied by two persons. No reservations made.

The Oxford Hotel, 17th and Wazee Streets. Two blocks above depot. European plan, $1.00 to $3.00 per day. An extra charge for two persons in one room.

The American House, 16th and Blake Streets. Take 16th Street car to Blake Street. American plan, $2.00 per day.

The above hotels make no extra charge for reservations or for persons occupying a room alone except as stated.

The Hotel Broadway, Cheyenne Street and Broadway. Take Colfax Avenue car to Cheyenne Street. American plan, $1.25 to $1.50 per day.

The Vallejo, 1420 Logan Avenue. Take Colfax Avenue car to Logan Avenue. American plan, $2.00 per day and upward.

The Devonshire, 14th and Logan Avenues. Take Colfax Avenue car to Logan Avenue. American plan, $1.50 per day and upward.

The Albert, 17th and Welton Streets. Take 17th Street (red) car to hotel. European plan, $1.00 to $1.50 per day.

The Aldine, 1013 Seventeenth Avenue. Take 17th Street (red) car to hotel. American plan, $1.25 per day.

The Richelieu, 1727 Tremont Street. Take 17th Street (red) car to Tremont Street. European plan, $0.50 to $1.00 per day.

The Earl, 1430 Tremont Street. Take Colfax Avenue car to Tremont Street. American plan, $1.50 to $2.00 per day.

Glenarm Hotel, Glenarm and 15th Streets. Take Colfax Avenue car to hotel. European plan, $1.00 per day and upward.

The Bonaventure, 18th and Glenarm Streets. Take 17th Street (red) car to Glenarm Street. European plan, $0.50 to $1.50 per day.

The Drexel, 17th and Glenarm Streets. Take 17th Street (red) car to hotel. European plan, .75 to $1.50 per day.

These hotels make small extra charges for two persons occupying same room. No charge for reservation.

Applications for rooms should be made to the hotels direct. For special information apply to ROBERT LEVY, M.D., Chairman Sub-Committee on Hotels, California Building, Denver, Colo. J. W. GRAHAM, M.D., Chairman.

W. A. JAYNE, M.D., Secretary.

Rush Monument Fund.—The following subscriptions to the Rush Monument Fund have been received:

June 10, 1897, Dr. Elmer Lee, New York	$ 1.00
June 10, 1897, Dr. E. D. Ferguson, Troy, N. Y.	5.00
June 10, 1897, Camden Co, N. J., Medical Society (through Dr. J. M. Ridge)	21.00
Dec. 14, 1897, Dr. H. D. Holton, Brattleboro', Vt.	100.00
Through Committee of American Medico-Psychological Association, from Dr. G. Alder Blumer, Utica, N. Y.	5.00
Dr. D. R. Burrell, Canandaigua, N. Y.	5.00
Dr. Gershom H. Hill, Independence, Iowa.	10.00
Dr. F. C. Hoyt, Clarinda, Iowa	5.00
Dr. C. S. Applegate, Clarinda, Iowa	2.00
Dr. Anna Burnett, Clarinda, Iowa	2.00
D. A. T. Gundry, Clarinda, Iowa	1.00
Dr. H. A. Gilman, Mt. Pleasant, Iowa	5.00
Total	$ 162.00
Before reported (June, 1897)	4112.44
Total	$4274.44

GEORGE H. ROHÉ, Secretary and Treasurer.

Section on Practice of Medicine.—The following papers are announced:

Address of the Chairman, by Samuel A. Fisk, Denver.

Discussion on Perforative Peritonitis, by J. C. Wilson, Philadelphia; J. B. Deaver, Philadelphia; F. C. Shattuck, Boston; Nicholas Senn, Chicago; W. S. Halsted, Baltimore; W. W. Keen, Philadelphia; J. H. Musser, Philadelphia; W. M. Polk, New York; C. G. Stockton, Buffalo; A. Lawrence Mason, Boston.

Yellow Fever, by P. E. Archinard, New Orleans.

Differential Diagnosis Between Yellow Fever and Dengue, with Some Account of the Epidemic in Texas of 1897, by H. A. West, Galveston.

(a) Diagnosis and Treatment of Headaches Due to Intestinal Toxemia; (b) A Case of Pernicious Anemia Due to Intestinal Toxemia, by Judson Daland, Philadelphia.

Weil's Disease, by N. S. Davis, Jr., Chicago.

Course and Management of Chronic Complicating Myocarditis, by Louis Faugeres Bishop, New York.

What Caused the Great Mortality Among the Plymouth Pilgrims in 1620–21, by I. N. Danforth, Chicago.

Physiologic and Clinical Relations of the Papillary Muscles of the Heart, by Henry Sewall, Denver.

Differentiation of Cardiac Incompetency of Intrinsic Heart Disease and Chronic Nephritis, by Frank Billings, Chicago.

Treatment of Diseases of the Duodenum by Direct Methods, by Fenton B. Turck, Chicago.

Dilatation of the Stomach, with Reports of Cases Treated by Diet, Massage and Intra-gastric Electricity, by Boardman Reed, Philadelphia.

(a) Nephritis Without Albuminuria; (b) Acute Febrile Jaundice, Arthur R. Edwards, Chicago.

Diabetes Mellitus at the Massachusetts General Hospital, from 1821–97; A Study of the Records, by Reginald H. Fitz and Elliott P. Joslin, Boston.

Subject to be announced, by James Tyson, Philadelphia.

Rare Forms of Arhythmia, by J. M. Anders, Philadelphia.

A Consideration of Four Cases of Epilepsy, with a Reference to the Cause, by Charles S. Bond, Richmond, Ind.

Rheumatoid Arthritis in a Child; Illustrated with Skiagraphs, by J. B. Marvin, Louisville.

The Association of Chronic Diarrhea with Achylia Gastrica, by Allen A. Jones, Buffalo.

Stomach Disturbances Caused by Hernia Epigastrica, with Report of Cases, by Charles D. Aaron, Detroit.

The Value of Sweat on Excretion, with Some Experiments, by Lewis R. Morris, New York.

Indol, Indican and Indigo Blue; Their Pathologic Significance and Clinical Value, by F. Leonard Vaux, Toronto.

Results from Some Experiments on Rabbits Imported to Colorado from the Sea Level, Conducted to Ascertain any Difference in the Bactericidal Action of Their Blood and the Accompanying Blood Changes, by Louis E. Livingood, Baltimore, and Gerald E. Webb, Colorado Springs.

The Influence of Sunlight on Tubercular Sputum in Denver, by W. C. Mitchell and H. C. Crouch, Denver.

The Treatment of Pulmonary Sepsis, by James T. Whittaker, Cincinnati.

The Treatment of Tuberculosis with the Products of Tubercle Bacilli, by Prof. Edwin Klebs, Chicago.

Some Neglected Physical Signs in Chest Diseases, by Norman Bridge, Los Angeles.

Additional Experiments with my Anti-phthisis Serum T. R., by C. Fisch, St. Louis.

Oxytuberculin in Tuberculosis, by J. O. Hirschfelder, San Francisco.

(a) The Diagnosis of Pulmonary Tuberculosis when the Tubercle Bacilli are not Present in the Sputum; (b) The Treatment of Pulmonary Tuberculosis, by DeLancey Rochester, Buffalo.

The Influence of the Climate of Arizona on Cases of Chronic Tuberculosis, by E. Everts, U. S. A., Whipple Barracks, Arizona.

Tuberculosis in Combination with Syphilis, by Carl Reudi, Arosa, Switzerland.

Tuberculosis and its Treatment by the Later Methods; Subject Illustrated by Twelve Clinical Cases, by A. G. Deardorff, San Francisco.

Modern Methods of Dealing with Pulmonary Consumption, by William F. Waugh, Chicago.

Permanent Cure of Tuberculosis by the Use of Anti-tubercular Serum (Paquin), by J. A. Dunwoody, Cripple Creek.

The Medical Treatment of Appendicitis, by Elmer Lee, New York. Discussed by E. J. A. Rogers, Henry Sewall, E. J. Rothwell, E. P. Hershey, B. C. Leavitt, C. E. Edson, Denver.

The Cataphoric Treatment of Cancer; a further Contribution, by G. Betton Massey, Philadelphia.

The Psychology of Habitual Constipation, by A. H. Burr, Chicago.

Rest; a Neglected Factor in the Therapeutics of Gastro-enteric Diseases, by C. D. Spivak, Denver.

Report of Case; Aneurysm of the Concavity of the Transverse Arch, Appearing Externally as a Large Tumor in the Region of the Heart; Exhibition of Specimens, by H. W. McLaughlin and William N. Beggs, Denver.

The Causes of the Inconstancy of Mitral Systolic Murmurs, by J. N. Hall, Denver.

Three Cases of Toxic Hemoglobinuria; Two Deaths, One Recovery, by George J. Hirth, Milwaukee.

Section on Obstetrics and Diseases of Women.—The following additional papers are announced for this Section:

Septicemia of Nasal Origin Complicating Celiotomy, Hugo O. Pantzer, Indianapolis, Ind.

Uterus and Child from the First Week of Gestation to the Commencement of Labor and the Formation of the Placenta, E. Gustav Zinke, Cincinnati, Ohio.

Treatment of Pelvic Abscesses, Howard A. Kelly, Baltimore.

Suspensio Uteri and Alexander's Operation; Which? When? How? D. C. Brockman, Ottumwa, Iowa.

The Rational Treatment of Chronic Endometritis and Metritis, Augustin H. Goelet, New York City.

Surgery of the Common Bile Duct, W. E. B. Davis, Birmingham, Ala.

The Use of the Curette in Acute Infection of Uterus with Adherent Placenta, D. S. Fairchild, Clinton, Iowa.

Gonorrhea as a Factor in Puerperal Fever, Albert H. Burr, Chicago, Ill.

A Valuable Modification of the Apostoli Treatment of Fibroid Tumors, G. Betton Massey, Philadelphia, Pa.

Sigmoid Surgery from the Intra-Pelvic or Intra-Abdominal Standpoint, J. G. Carpenter, Standford, Ky.

A Plea for the More Correct Application of the Emmet Method in Plastic Surgery, W. D. Haggard, Jr., Nashville, Tenn.

Section on Stomatology.—Dr. G. V. I. Brown, Milwaukee, Wis., Chairman; Dr. Eugene S. Talbot, Chicago Ill., Secretary. The following papers will be presented at the next meeting:

Chairman's Address, by G. V. I. Brown, Milwaukee, Wis.

Methods of Teaching Materia Medica, with Special Reference to the Needs of Dental Students, by W. B. Hill, Milwaukee, Wis.

A Method of Handling Alveolar Pyorrhea, by G. T. Carpenter, Chicago, Ill.

Only a Baby Tooth, by W. H. Hall, Denver, Colo.

The Management of Pulpless Teeth, by J. Taft, Cincinnati, Ohio.

Epulides, by W. Knight, Cincinnati, Ohio.

Dental Septicemia of the Antrum, by V. A. Latham, Chicago.

Some Facial Deformities and their Prevention, by A. E. Baldwin, Chicago, Ill.

Jaw Movements in Relation to Tooth Forms, by A. H. Thompson, Topeka, Kan.

Irregularities of the Dental Arch, by Eugene S. Talbot, Chicago, Ill.

The Resistance of the Mucous Membranes to Bacterial Infection, by V. A. Gudex, Milwaukee, Wis.

The Morbid Susceptibility of Dental Structures is Greater that that of Other Tissues, by A. H. Sawins, Denver, Colo.

Have We Progressed? by J. M. Porter, Denver, Colo.

SOCIETY NEWS.

Illinois State Medical Society.—For the forty-eighth annual meeting at Galesburg, May 17, 18 and 19, 1898, a rate of one fare and one-third on the certificate plan ($6.50 for the round trip from Chicago) is announced.

Association of Military Surgeons of the United States.—On account of the occupation of the members in connection with the war with Spain, it is announced that the eighth annual meeting, which was to have taken place June 1, 2 and 3 next, is postponed to a date to be fixed hereafter by the Executive Committee. JAMES E. PILCHER, Capt. Med. Dept. U. S. Army, Secretary; J. D. GRIFFTH, Lieut.-Col. and Med. Dir., N. G. Mo., President, Kansas City, Mo.

Association of American Medical Colleges.—The annual meeting of this association will be held at the Brown Palace Hotel, Denver, Colo., Monday, June 6, 1898, beginning at 10 o'clock in the morning. The Judicial Council will meet at the same place at 9:30 A. M. Each college, member of the association, is entitled to one representative and to one vote in all proceedings. The dean of the college is the official representative. When any other person acts in that capacity, he or she should bear an official appointment from the proper officers of the college. At a meeting of representatives of members of the association in Chicago, the following amendments to the Constitution were proposed:

Article III, Section 5 to read after "each course of at least six months duration," and each course of not less than 800 recitation hours, clinical and laboratory hours counting as half hours.

Article III, Section 7. A college not giving the whole four courses of the medical curriculum but otherwise eligible to membership may be admitted to membership the same as if it completed the curriculum and graduated students.

The members of the boards of examiners of the several States and all medical teachers are invited to the morning session and to listen to the president's address in the afternoon. BAYARD HOLMES, 104 E. Fortieth St., Chicago, Secretary.

The American Gastro-Enterological Association.—At the annual session of the American Gastro-Enterological Association held at Washington, D. C., May 3, 1898, the following officers were elected: President, D. D. Stewart, Philadelphia; first vice-president, Max Einhorn, New York; second vice-president, John C. Hemmeter, Baltimore; secretary and treasurer, Charles D. Aaron, Detroit. Council: Henry L. Elsner, Syracuse; A. P. Buchman, Fort Wayne; Frank P. Murdock, Pittsburg. The following papers were read:

A Case of Atrophy of the Stomach, with Exhibition of Specimen, by Julius Friedenwald, Baltimore, Md.

a, A case of Acute Pancreatitis; *b*, Carcinoma of the Cardia, by Morris Manges, New York.

Nervous Dyspepsia, with Report of Cases, by Frank H. Murdock, Pittsburg, Pa.

a, The Effect of Auto-intoxication on the Liver and Kidneys; *b*, Exhibition of New Instruments for Intubating the Duodenum and Outlining the Greater Curvature and Colon, by John C. Hemmeter, Baltimore, Md.

Precision of Terms in Diseases of the Stomach, by Chas. D. Aaron, Detroit, Mich.

Ohio State Medical Society.—Resolutions passed.

COLUMBUS, OHIO, May 5, 1898.

To the Editor:—The enclosed report with its recommendations, was adopted today by the Ohio State Medical Society. The immediate publication of it will be a favor, as it will be presented for action at the Denver meeting of the AMERICAN MEDICAL ASSOCIATION. Yours truly,

JNO. A. THOMPSON, Secy.

To the President and Members of the Ohio State Medical Society.

Gentlemen:—Your committee on National Legislation appointed in response to the overture of the New York State Medical Society has awaited the call of the committee of that society for a meeting in Washington to perfect a National organization, but so far no call has been received. Copies of the resolutions of this society anent the Antivivisection Bill of Senator Gallinger, still pending, were sent by your chairman to Dr. Busey, chairman of the District Committee of the District of Columbia, and likewise to Senators Foraker and Hanna. Your committee received a reply from Senator Foraker and a promise to give your request a favorable consideration, but so far received no reply from Senator Hanna. The District Committee, however, caused your resolutions to be printed and placed in the hands of every member of the Senate. Apparently, if we may judge from the circular letter sent out recently by Dr. Howard Kelly of Baltimore, Senator Gallinger is still obstinate in his determination to override the all but unanimous sentiment of the medical profession, and to push the enactment of his mischievous measure into law. But up to this time, owing in no small degree to the efforts of this society, he has not yet succeeded in bringing it to a vote. But the antivivisectionists are persistent; they have ample means and time at their disposal; they have able and influential advocates resident in Washington, and the medical profession must also have its men on the ground, acting with full authority delegated to them in order to counteract the efforts of the so-called humane organizations to hamper and hopelessly cripple biologic and physiologic investigation in the Government laboratories, and in the medical schools of the District of Columbia.

It seemed to your committee last year that the New York plan provided for too large a body, a body which from its very size would prove too unwieldly for prompt and effective work, but the need of a body which shall authoritatively represent the convictions of the organized medical profession upon those matters of legislation, regarding which the medical profession alone has the training requisite to speak with proper authority, become increasingly evident, and your committee beg leave to submit the following plan of organization for the consideration of this society:

1. That the AMERICAN MEDICAL ASSOCIATION be requested to appoint a standing committee of three on National legislation, one member to be a resident of Washington, one of Baltimore and one of Philadelphia. A committee so located could be called together at Washington on short notice and appear before the committees of Congress at any time.

2. That each State society of legally qualified practitioners of medicine be requested to appoint a committee of one on National legislation, such committee to keep himself in communication with the senators and representatives from his own State, so that they may be always kept in touch with the medical profession concerning matters of sanitary and medical legislation.

3. That a joint meeting of the committee of the AMERICAN MEDICAL ASSOCIATION and the committeemen of the several

State societies be held in Washington subject to the call of the Committee of the AMERICAN MEDICAL ASSOCIATION. The purpose of that meeting would be to give opportunity for each State committeeman to personally interview the Representatives and Senators from his own State, and for the committee as a whole or by subcommittees to appear before the various congressional committees to set before them authoritatively the sentiments of the medical profession regarding pending legislation, and to urge the passage of measures upon which the medical profession of the nation have already agreed, and to which they have already given support by formal action. Meeting thus on the ground and consulting together the members of such joint committee would moreover become better cognizant of matters upon which the medical profession ought to take action, and by embodying such matters in their annual reports to their respective societies the sentiment of the medical profession as a whole would become promptly and authoritatively declared. We should thus begin to act as a unit in matters of national legislation affecting the sanitary interests of the people as a whole.

4. That the necessary expenses of these committeemen be borne by their respective societies.

In conclusion, your committee would recommend the adoption of the following resolutions:

Resolved, That we again enter our earnest protest against Senate Bill No. 1063, entitled "A Bill for the Further Prevention of Cruelty to Animals in the District of Columbia," for the reason that existing laws amply provide for the prosecution and punishment of any real cruelty to animals which may be proven to occur within the District, and because the physicians and scientists of the District have not so conducted themselves in the past as to warrant the system of irresponsible espionage authorized by the bill, and further because the paramount interest of the sick and afflicted demands that the medical profession shall have liberty to investigate the nature and treatment of disease free from cumbersome and vexatious restrictions such as are provided in the measure in question.

Resolved, That we again urge upon Congress the necessity of thorough inspection by a medical officer of the United States of all immigrants and their baggage before they embark for this country, in order that the importation of contagious and infectious filth diseases may be more effectually prevented.

Resolved, That the secretary of this Society send a copy of these resolutions to each Senator and Representative in Congress from Ohio, and of the second resolution to the Chairman of the Committee on Commerce and on Immigration of both House and Senate. Respectfully submitted,

L. B. TUCKERMAN,
RUFUS B. HALL,
A. M. BLEILE,
} Committee.

PUBLIC HEALTH.

Non heredity of Tuberculosis.—G. Kuss concludes from extensive research that the immense majority of cases of infantile tuberculosis are acquired after birth by inhaling the germs. The conclusion follows that the children of tuberculous patients should be removed at once after birth from all danger of contagion and brought up in an environment entirely free from tuberculous products.—*Thèse de Paris*, 1898.

Lepers Before the Courts.—A number of lepers in a Russian leprosorium recently attacked and flogged the superintending physician and were summoned to answer at the bar of justice for their criminal assault. But the court and jail officials objected decidedly to their presence and appealed to the higher courts, which decided the unprecedented affair by canceling the summons and leaving the matter to the administration of the institution.—*St. Petersburg Med. Woch.*, April 9.

Endemic Pneumonia.—The *Deutsche Med. Woch.* of April 7 contains an account of four cases of extremely malignant lobular pneumonia in a family. The necropsy of one of the three fatal cases disclosed a mixed infection with the streptococcus and bacillus proteus. A parrot in the house was also affected, but no bacteriologic connection between it and the other cases could be established.

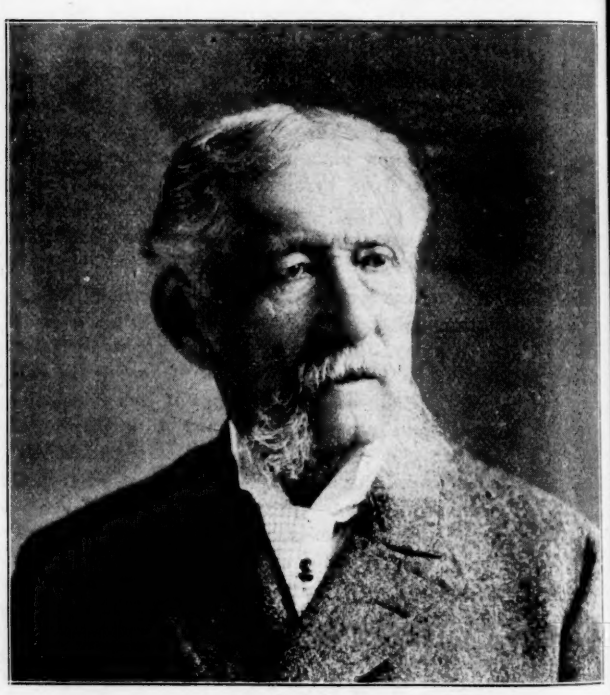
Bubonic Plague in Hong Kong.—Advices by the steamer *Columbia* from the Orient as reported from Tacoma, Wash., May 5, bring the current history down to April 6. In the week previous to the latter date cases in Hong Kong had increased and the colonial government was busy with plans to prevent a spread. A correspondent of the Hong Kong press states that forty new cases were occurring daily. A medical inspection of Chinese coming from Macao and Canton, where smallpox was also prevalent, has been instituted.

Pharmaceutic Advertisements in Non-medical Journals are not allowed in Russia, according to the *Progrès Méd.* No specialty can be advertised except in the medical press. A recent decree in Germany places "secret medicines" under the same regulations as poisons. The name, price, composition and maker must be plainly indicated; no testimonials, etc., are allowed on the bottle or wrapper. The administration reserves the right to prohibit the sale of certain remedies and establish a maximum price. Similar regulations are already in force in Russia.

How Long Will Diphtheria Serum Retain its efficiency was discussed by Aaser of Norway (*vide* JOURNAL, page 1060), and his conclusions for that cold climate have been practically confirmed by Abba of Turin, who states that the shortest period is a year and a half. It is not affected by light nor temperature, and some specimens retained their efficiency three years, but as a general rule it can be injected with confidence under a year and a half, without regard to changes in its color or transparency.—*Gazz. degli Osp.*, February.

NECROLOGY.

DAVID W. YANDELL, M.D., died at his residence in Louisville, Ky., May 2, at 10 o'clock, P.M. He was taken seriously ill about four years ago, never having been out of the house since

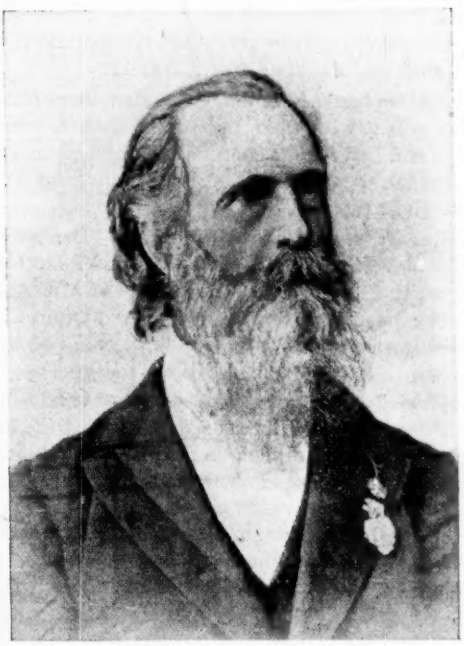


DAVID W. YANDELL, M.D.

that time, his end coming peacefully, surrounded by his family. Dr. Yandell was born in Tennessee, at Craggy Bluff, six miles from Murfreesboro, Sept. 12, 1826. This was near the spot afterward made memorable by one of the bloodiest battles of the civil war. His mother was a Miss Waddell and his father Dr. Lunsford P. Yandell, one of the leading physicians of Louisville and a professor in Transylvania University at Lexington, Ky. In 1831 Dr. L. P. Yandell moved to Lexington, where he remained until 1837, when he came to Louisville and

founded the Louisville Medical Institute. The subject of this sketch studied under various teachers in Louisville and Lexington and afterward at Center College, Danville, graduating in medicine at the University of Louisville in 1846. In the fall of the same year he sailed for Paris, and studied medicine there for three years. In 1849 he returned to Louisville, but as his health failed he went to farming near Nashville, Tenn., and began the practice of his profession in Louisville three years later. He established the Stoke's Dispensary and conducted private classes in medicine for several years. In 1867 he was appointed professor in the University of Louisville, of the science and practice of medicine. He retained this chair but one year, when he resigned, but in 1869 he was elected to the chair of surgery and clinical surgery, which chair he occupied until his death. In conjunction with Dr. Parvin of the University he established the *American Practitioner*, which was afterward amalgamated with the *Louisville Medical News* under the name of the *American Practitioner and News*. Dr. Yandell was editor in chief and Dr. H. A. Cottell associate editor. The AMERICAN MEDICAL ASSOCIATION chose Dr. Yandell as its President in 1871, the year it met in Louisville. Dr. Yandell was a member of AMERICAN MEDICAL ASSOCIATION, the American Surgical Association, the Kentucky State Medical Society and all the local societies. He was a fine lecturer and held in the highest esteem by the members of his classes. Although he was not a church member he had the greatest reverence for religion and always endeavored to impress the same ideas on his pupils. His reputation as a surgeon was not acquired by any one remarkable operation but by close and diligent application to his chosen profession. In the fall of 1861 Dr. Yandell enlisted as medical director under Albert Sidney Johnston at Bowling Green, Ky., and continued with him to the time of Johnston's death at Shiloh, April 6, 1862 After General Johnston's death Dr. Yandell was appointed medical director on the staff of Gen. W. G. Hardee, and was with him at the battles of Perryville, Murfreesboro and Chickamauga. He remained with General Hardee until 1864, when he was transferred to the trans-Mississippi department, at his own request, under Gen. Kirby Smith, with whose command he remained until the end of the war. Dr. Yandell was a leader in all public movements. He took a great interest in the Louisville Legion and was its medical director for many years prior to his death. He was a great friend and admirer of Joseph Jefferson, the actor. He was a member of the Pendennis, Filson and Salmagundi Clubs and had many good friends among the rich and poor alike. He was a fine sportsman and owned some very fine dogs, although he did not devote very much time to their breeding. He cared more for the dog's ability to find birds than he did for its pedigree. Not many months passed without the Doctor taking a little time and spending a few days in the country hunting. Dr. Yandell was a man of commanding presence and great ability. He was of rough exterior, plain spoken at times almost to the verge of harshness, his rugged bosom encased a heart whose pulsations were all tenderness for the suffering and distressed. Successful as a physician and surgeon he amassed a handsome competence and his purse was always open to the needy. He married Miss Frances Crutcher of Nashville, who survives him, with two daughters, Maria, the wife of Dr. W. O. Roberts, and Susan, Mrs. Jas. F. Buckner. He has one brother, a physician in El Paso, Texas.

ISAAC NEWTON QUIMBY, M.D., New York University Medical College, 1859, member of the AMERICAN MEDICAL ASSOCIATION, the Gynecological Society of Boston, Mass., Society of Medical Jurisprudence of the Hudson County (N. J.) District Medical Society and a frequent delegate to State medical societies, died at his home in Jersey City, N. J., May 6. He was an active participator in medical debates, a writer of practical papers and at the time of his death was president of the staff of the Jersey City Hospital. Dr. Quimby was born Aug. 5, 1831, and left an orphan at an early age. In 1859 he graduated from his college with a special certificate of honor. On the breaking out of the civil war he entered the army as a volunteer surgeon, served with General McClellan's forces in the swamps of the Chickahominy and in the Seven Days' Battle. He was also at Antietam, remaining with his division until after the battles of the Wilderness. He was the originator of the Hudson County, now Christ's, Hospital in 1868, and surgeon to the same until 1873. He was one of the founders and the first chairman of the Section on Medical Jurisprudence of the AMERICAN MEDICAL ASSOCIATION. He was also a member of the American Public Health Association, the Medico-Legal Society of New York, the Mississippi Valley Medical Association, member of the British Medical Association, of the American Association for the Cure of Inebriety, a delegate from the AMERICAN MEDICAL ASSOCIATION to the International Medical Congress, London, 1881, again in 1884, in Copenhagen, and again in 1894, at Rome, Italy, and a member of the First Pan-American Medical Congress, which met at Washington, D. C., in September, 1893. Dr. Quimby has devised several important improvements in surgical operations, reported in the "Transactions of the AMERICAN MEDICAL ASSOCIATION," and was one of the founders of the American



ISAAC NEWTON QUIMBY, M.D.

Medical Temperance Association in 1891, vice president in 1891. At a special meeting of the staff of the Jersey City Hospital, May 7, 1898, the following resolutions were unanimously adopted:

WHEREAS, Dr. Isaac N. Quimby, for so many years a member of the Jersey City Hospital Staff, has been removed by death, therefore be it

Resolved, That we, the members of the staff, fully realize how great is our loss in being deprived for all future time of the kindly counsel and companionship of our late associate, Dr. Isaac N. Quimby, that we feel that by his death, not only among ourselves, but in the community at large, a vacancy has been created which can not easily be filled. That we tender to his family our most sincere sympathy in their sad bereavement. That a copy of these resolutions be sent to the daily papers of the city and to the prominent medical journals of the country.

PETER GUNTERMAN, M.D., died May 1 after a brief illness. Dr. Gunterman was born in Germany, fifty-five years ago, received his early education there, and when a young man came to this country and was for several years one of the instructors in the Gethsemene Seminary near Bardstown, Ky., a Roman Catholic monastery. He entered the University of Louisville where he was graduated in 1869, beginning the practice of his profession at once in a little town in Indiana,

where he remained for five years, then removed to Louisville, where he practiced his profession continuously to the time of his death. He was a member of the Louisville Clinical Society for a number of years and has contributed some valuable articles at various times at its meetings. He was genial, courteous, kind and a most excellent friend, and his many friends mourn his untimely death.

CHARLES STORCK, M.D., Chicago, died May 6. He was born June 9, 1826, in the Grand Duchy of Baden, won distinction as a captain of engineers in the revolution of 1848, came to this country in 1851, and received his medical degree in 1855 at Albany, N. Y. He served as a surgeon in the civil war until symptoms of heart trouble obliged him to retire from service.

ALBERT BROWNELL WORTHINGTON, M.D., Middle Haddam, Conn., April 26, aged 79 years.——D. C. Durham, M.D. Anoka, Minn, May 20.

MISCELLANY.

The Bacillus Icteroides is said to be one of the most actively pathogenic germs yet discovered. Foa's tests with the serum furnished by Sanarelli confirm the latter's statements in every particular.—*Gazz. d. Osp.*, February.

The Cure of a Congenital Goiter in a Nursling, by thyroid medication taken by the mother, is reported by Mosse. The child showed the effects of the treatment more promptly than the mother—*Bull. de l' Acad. de Méd.*, April 12.

A Tumor in the Femur resembling the structure of the thyroid gland was recently removed by Goebel from a woman of 54 years, who had had femoral hernia twice and pseudo-arthrosis. This makes the sixteenth case of struma metastasis on record. —*Münch. Med. Woch.*, April 12.

The University of Michigan a Beneficiary.—Dr. Elizabeth H. Bates, who died recently at Port Chester, N. Y., has bequeathed property worth $135,000 to the University of Michigan at Ann Arbor. The bequest is to yield $6000 per annum with a view of establishing a professorship for the diseases of women and children.

The Typhoid Bacillus and Arsenious Acid.—Another means of distinguishing between Eberth's bacillus and the bac. coli is that the former will not develop in peptonized bouillon to which one centigram per thousand of arsenious acid has been added, while the bac. coli grows readily in the same containing even as much as one and a half grams of arsenious acid.—*Bull. de la Soc. Méd. des Hôpitaux*, March 24.

Army Surgeons.—The bill (H. R. 9638) to increase the number of surgeons in the United States Army, was passed by the Senate May 6. It is as follows:

Be it enacted, etc., That the number of medical officers of the Army be increased by the addition of fifteen assistant surgeons with the rank of first lieutenant, to be appointed by an Army medical examining board, in accordance with existing regulations.

SEC. 2. That in emergencies the Surgeon-General of the Army, with the approval of the Secretary of War, may appoint as many contract surgeons as may be necessary, at a compensation not to exceed $150 per month.

Radiography of the Stomach.—By mixing bismuth subnitricum with the food and beverages, Roux and Balthazard have succeeded in watching the contractions and action of the stomach during digestion, with the fluoroscope, and taking a series of radiographs of the entire process, in dogs.—*Deu. med. Woch.*, April 7, from *Arch. de Phys.*, x, p. 85.

Dr. Samuel H. Durgin Re-elected.—At a recent meeting, the Boston Board of Health organized by re-election of Dr. Samuel H. Durgin as chairman and Charles E. Davis, Jr., as secretary of the board. Commissioner Edwin L. Pilsbury, whose term of office expired on April 30, holds over until the election of a successor. He is a candidate for re-appointment.

The New Keratin Treatment for Syphilis.—De Lalande reports that he has treated thirty syphilitics during the last two years with a solution made of calves' horns pulverized, 60; chlor of sodium, 10, and distilled water, 1000, injected subcut neously, curing every case with from ten to thirty injection and no relapses to date. He ascribes the effect to a combine sero- and opo- therapeutic action. Full particulars are give in the *Presse Méd.* of March 12.

Compensatory Hypertrophy of the Suprarenals.—Simmonds h observed a case in which one suprarenal, histologically norma weighed 15 grams and the other, tuberculous, only 2. He h produced a similar compensatory hypertrophy in young an mals, but his experiments on older animals were negative which suggests an explanation of the few instances of thi hypertrophy noted at necropsies.—*Münch. Med. Woch.* April 12.

Diphtheria Antitoxin per Os.—Zahorsky (*N. Y. Med. Jour.* March 19) reports results from a study of diphtheria antitoxin administered by the mouth. He found the great objection t its ingestion was its slow absorption, its effect not being notice for from twenty-eight to thirty-six hours. The sequelæ by thi method are similar to those produced by its subcutaneous use but joint pains, erythema, urticaria and dysmenorrhea are no prevented. Its absorption is sometimes delayed or wanting making this method less reliable than the subcutaneous. I should therefore be given by mouth only in exceptional cases in mild cases in adults, or for prophylactic purposes when i should be the preferable method. In the issue of April 9 Fisch reports experiments which confirm the slow absorption of antitoxin given by mouth, but he asserts that for prophy lactic purposes it should be thus employed only with careful discrimination of the conditions.

A Permanent Home for the Paris Académie de Médecine is no assured, as the government has recently appropriated abou $300,000 to erect a suitable building, rue Bonaparte. The rich library and collections of the Académie, containing 180,00 published works, portraits of 6000 physicians, priceless MSS. etc., are exposed to danger from fire in the old chapel of the Charité where the Académie has been installed since 1850. The Académie has agreed to return one-third of the amount, having nearly enough bequests already on hand for the purpose.

The Criminal Insane.—In the *Medical Record* for April 9, Williams gives some statistics on this subject. He finds that during the past twenty-five years, 459 murderers have been apprehended in New York State, and of that number 40 per cent. have been confined in insane asylums since their crimes were committed, while 30 per cent. were insane at the time of their crimes. Again, fully 20 per cent. of all the murderers apprehended should, long before their crimes were committed, have been confined where they could do no harm, their mental aberrations being so pronounced. He says the prison records show the average length of confinement, including life sentences, is but a little over two years, while the average confinement in insane asylums is over four years.

Colleges.

HARVARD UNIVERSITY, WASHINGTON, D. C., graduated thirty-two from the Medical Department, May 6.——At the eighth annual commencement of Laura Memorial College, Boston, there were seven graduates.——The graduating class of the St. Louis Medical College numbered twenty-eight, April 29.—Creighton Medical College, Omaha, Neb., had a graduating class of fifteen.——The College of Physicians of Philadelphia is to receive $1000, a bequest from the late Oliver A. Judson.

Boston.

SUFFOLK DISTRICT MEDICAL SOCIETY.—At the last annual meeting of the Suffolk District Medical Society, held April 20, 1898, the following officers were elected: President, Francis H. Brown; vice-president, Herbert L. Burrell; secretary, John Dane; treasurer, Augustus L. Knight; Librarian, B. Joy Jeffries.

APPOINTMENT.—Dr. Fred M. Briggs has been appointed Professor of Clinical Surgery at Tuft's College Medical School.

THE WARREN TRIENNIAL PRIZE has been awarded to Dr. Howard Ames Lathrop of Boston, for an essay on "The Anatomy and Surgery of the Frontal Sinus and Anterior Ethmoidal Cells."

N. E. PHYSICIANS AT THE DENVER MEETING.—The prospects are that a large number of New England physicians will avail themselves of the opportunity to visit the great West by attending the meeting of the AMERICAN MEDICAL ASSOCIATION at Denver. Dr. R. E. Campbell of Bellows Falls, Vt., is secretary of the New England Railroad Committee of Arrangements.

THE SHARON SANITARIUM.—The report of the seventh year of Sharon Sanitarium for pulmonary diseases is favorable to the methods employed in that institution. The results show, according to the report, that "incipient consumption can be arrested in a large percentage of cases even in the vicinity of Boston." An appeal is made for funds to enlarge the institution and thereby increase its usefulness.

VALUABLE PUBLICATION.—The Massachusetts State Board of Health has recently issued a publication on "Epidemic Cerebrospinal Meningitis and its Relation to other Forms of Meningitis." It was compiled under the direction of Drs. Councilman, Mallory and Wright, and is the result of a clinical and pathologic investigation of 111 cases made by these gentlemen. Many new facts are brought out in the book, and it is believed to be really a valuable acquisition to medical literature.

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended April 30, shows the total number of deaths to have been 90, of which 49 were white and 41 colored. The principal causes of death were: Diseases of the lungs, 24; diseases of the nervous system, 19; one death each from diphtheria and scarlet fever and two from whooping-cough. There were 32 cases of diphtheria and 46 cases of scarlet fever under treatment at the close of the week.

TO REGULATE POSSESSION OF DEADLY WEAPONS.—The Senate has passed House Bill 5885 recommended by the commissioners, regulating the carrying and sale of deadly weapons in the District of Columbia.

MARINE HOSPITALS.—The President has approved an order directing the use of any and all Marine Hospitals for the treatment and reception of sailors and soldiers of the army and navy whenever a necessity therefor arises. This was a superfluous order, as the regulations have provided for this for many years past.

PUBLIC VEHICLES TO BE REGULATED.—The Health Office is to be congratulated on discovering a law still in force, which permits that department to condemn or render sanitary any public vehicle used in the District, when such are found to be unclean or a menace to health. The physicians who are compelled to employ the "night liners" have been complaining for a long time of the filthy and disgraceful condition of many of these moving pest disease-spreaders, masquerading as vehicles.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—At the annual meeting of the Board of Directors held on the 6th instant for the election of officers, the following were chosen: President, W. J. Boardman; vice-president, Henry F. Blount; secretary, W. C. Whitmore; treasurer, Hon. John B. Wight. Mrs. Senator Hawley reported that her committee of ladies expected very shortly to be able to have sufficient funds on hand to reconstruct and modernize the general operating room of the hospital.

PHYSICIAN TO THE WHITE HOUSE.—Surgeon-General George M. Sternberg, President of the AMERICAN MEDICAL ASSOCIATION is now the attending physician at the White House. Col. Wood, the former physician, will be stationed at San Antonio, Texas, with his regiment.

MEDICAL SOCIETY.—At the meeting of the Society held on the 4th instant, Surgeon S. L. Allen read the essay of the evening entitled "Acute Hemorrhagic Encephalitis." Dr. Stone presented some interesting cases and specimens.

WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.—At the two hundred and eighty-first meeting of the Society held on the 6th instant, Dr. Stone read a paper on Gramet's operation for relaxed vaginal outlet and lacerations of the perineum. Dr. Bovee presented a specimen of fibroma uteri.

Philadelphia.

DR. JOHN GUITERAS HONORED.—Dr. John Guiteras, professor of pathology in the University of Pennsylvania, and a prominent member of the Cuban junta in this country, has been summoned by the Government to report at Tampa, Fla., where he goes on duty as an expert on tropical diseases, and to give proper instruction to the United States troops relative to the prevention of the introduction of yellow fever into the United States as well as to instruct the troops of proper precautions to be used to prevent the disease while on the island of Cuba. His lectures have closed at the University and it is possible that his new duties will keep him away until the fall session begins. It will be remembered that Dr. Guiteras was called south last year during the epidemic of yellow fever, as authority on this disease.

BEQUEST TO THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—By the will of the late Dr. Oliver A. Judson of Philadelphia, the College of Physicians will receive $1000 to be held in perpetuity. A clause in the will stipulates that: "As often as the interest on the same shall amount to $100 the same is to be offered as a prize for the best original essay on 'The Practical Prevention of Disease,' and to be known as the 'Oliver A. Judson prize,' and need not be awarded if no essay merits it." In this way it is hoped to stimulate investigation in this special branch of medicine.

APPOINTMENT FOR DR. WILLIAM PEPPER.—The Adjutant General of the United States Army recently advised Governor Hastings of the necessary physical examinations requisite before volunteers would be permitted to join a State encampment. An army surgeon and two civilian physicians will constitute such a board of examiners for the State of Pennsylvania. Governor Hastings has therefore appointed Dr. William Pepper of Philadelphia and Dr. W. S. Foster of Pittsburg, to conduct such examination on the part of physicians. In this way it is hoped to restrain those who are physically disabled from joining the militia.

PHILADELPHIA MORTALITY STATISTICS.—For the week ending Saturday, April 30, there was an increase of forty-five deaths over the previous week, the total number of deaths being 472. Of this number there were from scarlet fever, 4; diphtheria, 16; typhoid fever, 6; as against 2, 13 and 6 respectively for the week preceding.

Louisville.

ORDINANCES.—Health Officer Allen has introduced an ordinance regulating the sale of milk, which has passed one branch of the general council and will be favorably reported by the Committee on Health of the upper board. Its exactions are as follows: The name of the dairyman must be placed conspicuously on the dairy wagons and in the store where milk is sold; defines good mik and prohibits its adulteration; cows must not be fed on swill, slop or other fermented foods; cows must not be crowded, must be kept clean; must be healthy and must be inspected by a veterinary surgeon every three months; samples of milk must be furnished the city health department whenever demanded. An ordinance was also passed regulating the collection and disposal of garbage or trash, making it unlawful not to have tarpaulins or covering to wagons. An ordinance was also introduced providing for an "embalming board" for licensing only competent embalmers. This board to consist of the president of the Board of Public Safety, the health officer, a competent embalmer, the Jefferson County referee of the State Board of Health and the coroner of Jefferson County. The ordinance was passed in one board and referred to the other for consideration.

STATE GUARD.—There seem to be several hitches in the appointment of surgeons to the various regiments of the State Guard ordered into camp at Lexington. Deputy United States Surgeon-General W. K. Gardner is in charge of the examinations, with a board appointed by the governor. Drs. David Barrow and B. S. Coleman were at first appointed but resigned. Drs. W. B. McClure and Archie Barclay were appointed in their stead. Drs. Charles Farmer and R. N. Winn were passed for surgeons of the Second Regiment. Drs. E. L. Pearce, Irvin Lindenberger and Brent Palmer of Louisville for First Regiment, Dr. Waller Dade, formerly of Frankfort, and now of Chicago, and Dr. Grinstead of Bowling Green will also appear before the board.

BULLOCK.—Dr. Thomas S. Bullock has returned from Arkansas fully restored to health.

KENTUCKY SCHOOL OF MEDICINE.—The following members of the faculty, Drs. J. M. Holloway, J. M. Mathews, J. B.

Marvin, C. W. Kelly and S. E. Woody have filed suit in the law and equity court against Drs. W. H. Wathen, M. F. Coomes and Henry Orendorf to compel them to dispose of their share in said school. This suit is the culmination of an effort on the part of the majority more than a year ago to displace the three men mentioned as members of the faculty.

THE COUNTY BOARD OF HEALTH met at the office of Dr. W. H. Wathen, the Referee of the State Board of Health for Jefferson County, and organized by electing the following officers: George W. Griffiths, president; J. M. Krim, secretary; B. M. Smock, sanitary inspector. The board adopted the rules and regulations of the State Board and, as now organized, has under the statutes of the State full authority to abate nuisances or all conditions prejudicial to the health and happiness of the people and to enforce regulations in the interest of health and the prevention of disease, such as vaccination, etc.

THE PUBLIC SERVICE.

Circular Letter.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D. C., April 25, 1898.

The number of physicians who have offered their services to the Government now exceeds 1500, and every mail brings numerous additions to the list.

The Surgeon-General highly appreciates the patriotic motives which have induced this offer of services—in many instances by men prominent in the profession and enjoying a lucrative practice—but the labor of answering these numerous letters interferes with the necessary work of the office, which has been *greatly* increased by the exigencies connected with equipping the Regular and Volunteer Armies for field service. It therefore becomes necessary to acknowledge letters offering service and inquiries relating to the Medical Department by this circular letter.

No appointments are made in the Regular Army except after examination by an Army Medical Examining Board, and all applicants must be graduates in medicine and less than 29 years of age.

The Surgeon-General of the Army has nothing to do with the appointment of medical officers for the Volunteer Army.

Comparatively few Contract Surgeons (Acting Assistant Surgeons) are likely to be required, and it is the intention to employ for service with troops going to Cuba or at hospitals on the Gulf Coast, only such as are immune to yellow fever.

All applications and offers of service will be placed on file for future reference, and for selection of the most available persons for the special duty required, in case of need.

No female nurses will be sent to Cuba or to hospitals on the Gulf Coast, and it appears probable, at present, that there will be no necessity for the employment of trained female nurses. All applications will, however, be placed on file for future reference in case of need.

GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

Army Medical Examining Board.

The scope of the competitive examination for admission into the Medical Department of the Army has been extended, under the direction of the Surgeon-General, by the Army Board now in session in Washington, D. C. The number of subjects has not been increased, but so much more time is now given to oral examination in each subject that the ordeal lasts ten days instead of being finished in six. Formerly two subjects were disposed of daily, one in a forenoon, the other in an afternoon session, but now one whole day is devoted to each of the principal branches. Formerly also the examination began with an inquiry into the general education of the candidates, including arithmetic, geography, history and general literature, but now these subjects are brought in at the close of the competitive trial. This change appears to have been made in the interest of men who, while well versed in professional matters, have permitted themselves to lapse into forgetfulness of their early school branches. When the preliminary examination, as it was called, into general education came first, such men were likely to lose heart on account of their appreciation of their own shortcomings, and to withdraw from the competition before they had an opportunity of showing the strong points of their education and training.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from April 30 to May 6, 1898.

Acting Asst. Surgeon Francis Lieber, U. S. A., will proceed from this city, Washington, D. C., to Ft. Clinch, Bernandina, Fla., and report in person to the commanding officer of that post for duty.

Major Louis Brechemin, Surgeon, is relieved from duty at Ft. Sherman, Idaho, and ordered to Vancouver Bks., Washington, for duty, relieving Capt. Frederick P. Reynolds, Asst. Surgeon. Capt. Reynolds, on being thus relieved, will repair to Washington, D. C., without delay, and report in person to the Surgeon-General of the Army for assignment to duty.

Acting Asst. Surgeon H. W. Danforth, U. S. A., will proceed from Washington, D. C., to Tampa, Fla., and report in person to the commanding General of the troops at that place for duty.

Acting Asst. Surgeons John Guitéras and W. W. Calhoun, U. S. A., will proceed from Washington, D. C., to Tampa, Fla., and report in person for duty to the commanding General of the U. S. troops at that place.

Col. Charles R. Greenleaf, Asst. Surgeon-General, having reported in person to the Surgeon-General of the Army, the Secretary of War directs that he report in person to the Major-General commanding the Army, for duty on his staff as chief surgeon of the troops in the field.

Capt. Edward C. Carter, Asst. Surgeon, having reported in person to the Surgeon-General of the Army, is assigned to duty as assistant to the attending surgeon, Washington, D. C.

First Lieut. James S. Wilson, Asst. Surgeon, will be relieved from duty at Ft. Caswell, N. C., upon the arrival at that post of Acting Asst. Surgeon Frank Roberts, and will report in person for duty to the commanding General of the troops in the field at Chickamauga National Park.

Major Alfred C. Girard, Surgeon, having reported to the Surgeon-General of the Army, will proceed to West Point, N. Y., and report in person to the superintendent of the U. S. Military Academy for temporary duty at that post.

Major George H. Torney, Surgeon, is relieved from duty at the U. S. Military Academy, West Point, N. Y., to take effect upon the arrival at that post of Major Girard, and will proceed to New York City and take charge of the hospital ship "Vigilancia," under detailed instructions from the Surgeon-General.

Capt. Charles Willcox, Asst. Surgeon, is relieved from duty at Ft. Bliss, Texas, and ordered to report in person to the commanding General of troops in the field at Mobile, Ala.

Major William B. Davis, Surgeon, is relieved from duty with the Nineteenth Infantry at Mobile, Ala., and ordered to Ft. Myer, Va., for temporary duty.

First Lieut. William E. Richards, Asst. Surgeon, is relieved from duty at Ft. Apache, Ariz., to take effect upon the arrival at that post of Capt. Edward Everts, Asst. Surgeon, and will report in person to Major General John R. Brooke, commanding Camp George H. Thomas, Chickamauga National Park, for duty with troops in the field.

CHANGE OF ADDRESS.

Ammerman, N. S., from Harbine to Reynold, Neb.
Boren, S. L., from Galveston to Carthage, Tex.
Boyer, J. S., from Chicago, Ill., to Richardville, Va.
Brown, E. V. L., from 268 S. Wood St. to 349 Ogden Ave., Chicago, Ill.
Chapman, C. F., from 594 Washington Boul. to 883 Washington Boul., Chicago, Ill.
Cox, J. E., from Los Angeles to Big Pine, Cal.
Dulaney, R. W., from Johnson City to Jonesboro, Tenn.
Engert, R. H., from Venetian Bldg. to 486 N. Clark St., Chicago, Ill.
Faris, J. W., from St. Louis to Caruthersville, Mo.
Fisher, B. B., from 2220 Walnut St. to 1095½ 3d Ave., Milwaukee, Wis.
Frederick, R. C., from Chicago, Ill., to Pte. Coupee, La.
Garrett, G. H., from Blue, Ind. Ter., to Miller Grove, Tex.
Gibson, G. G., from Des Moines to Odebolt, Iowa.
Grasse, D. F., from Chicago, Ill., to Fargo, N. D.
Guerard, A. R., from New York, N. Y., to Flat Rock, N. C.
Hayford, E. L., from 843 Jackson Boul. to 926 W. Monroe St., Chicago.
Hamill, E., from 323 S. Western Ave. to 812 Warren Ave., Chicago, Ill.
Howard, R. E., from New York, N. Y., to Kasbeer, Ill.
Jenney, F. L. B., from 1780 Wrightwood Ave. to 1033 Evanston Ave., Chicago, Ill.
Jones, C. C., from Galveston to Brock, Tex.
Johnson, C. J., from 663 Jackson Boul. to 522 Congress St., Chicago, Ill.
Kidd, O. R., from Hampton to Carrsville, Ky.
Klebs, E., from Hotel Majestic to 4419 Indiana Ave., Chicago, Ill.
Langdon, C. P., from Columbus to Westerville, Ohio.
Law, H. L., from Hartford, Conn., to U. S. R. S. "Wabash," Boston Navy Yard, Boston, Mass.
Maylor, H., from 305 W. Broadway to 1517 Southgate St., Louisville, Ky.
Mayhew, J. M., from 1393 Lake St. to 870 Warren Ave., Chicago, Ill.
McDanill, R., from Galveston to Granger, Tex.
McGauran, G. D., from 422 to 319 W. 51st St.
Meyer, A. G., from St. Louis to Ste. Genevieve, Mo.
Mitchell, G. D., from 1840 N. Clark St. to 7033 Honore St., Chicago, Ill.
Miller, Y. Y., from Linn Grove to Brown's Grove, Ky.
Mock, J. H., from Richmond, Va., to Thomasville, N. C.
Nance, W. O., from 5466 Monroe Ave. to 5311 Madison Ave., Chicago, Ill.
Nicoll, D. T., from Kilbourn City, Wis., to Clinton, Iowa.
Nolder, S. M., from Newton, Kan., to Tipton, Ind.
Paine, H. M., from Glens Falls, N. Y., to West Newton, Mass.
Pence, L. W., from Fertile, Iowa, to Cherryvale, Kans.
Pennock, V. R., from Longmont to Cripple Creek, Colo.
Rowe, J., from Abingdon to Hos. Dept., 1st Cav., Camp Tanner, Springfield, Ill.
Rogers, M. W., from Galveston to Jones Prairie, Tex.
Schmitt, G., from 1498 Fulton St. to 120 Warren Ave., Chicago, Ill.
Sherman, A. W., from 291 Ogden Ave. to 944 Polk St., Chicago, Ill.
Sullivan, E. P., from 49 Park Ave. to 188 S. Oakley Ave., Chicago, Ill.
Turck, F. B., from 555 to 362 Dearborn Ave., Chicago, Ill.
Van Tuyl, H. I., from 3001 Calumet Ave. to 3133 Indiana Ave., Chicago.
Wandless, H. W., from 272 Madison Ave. to 39 W. 36th St., New York.
Ward, J. T., from Galveston to Huntsville, Tex.
Wearne, F. J., from 843 S. 19th St. to St. Joseph's Hospital, Omaha, Neb.
Weitz, G. J., from Indianapolis, Ind., to Cleveland, Ohio.

LETTERS RECEIVED.

Anderson, W. D., Vallejo, Cal.
Battle Creek Sanitarium, Battle Creek, Mich.; Beach, S. C., McCook, Neb.; Bonwill, W. G. A., Philadelphia, Pa.; Boehringer, C. F., & Soehne, New York, N. Y.; Brinket, A. J., Detroit, Mich.
Chicago & Northwestern Railway Co., Chicago, Ill.
Davis, N. S., Chicago, Ill.; Denver Chemical Mfg. Co., Denver, Colo.
Edmiston, C. C., Buffalo, N. Y.; Edwards, Wm. M., Kalamazoo, Mich.; Elliott, A. R., New York, N. Y.
Farrington, John M., Binghamton, N. Y.; Fessenden Mfg. Co., Pittsburgh, Pa.
Garcelon, Alonzo, Lewiston, Me.; Goldstein, M. A., St. Louis, Mo.; Graham, J. W., Denver, Colo.
Hektoen, L., (2) Chicago, Ill.; Holmes, Bayard, Chicago, Ill.; Hodges, Fred J., Anderson, Ind.
Kane, Thomas L., Kane, Pa.; Kentucky School of Medicine, Louisville, Ky.
Lander, Dr., Cincinnati, Ohio; Lewis, Robert C. M., Centerburg, Ohio.
McGinnis, R. H., Charlotte, N. C.
Norris, M. D., Baltimore, Md.
Paquin, Laboratories, Paul, St. Louis, Mo.; Palmer, V. R., Mrs., New Castle, Pa.; Penhall, F. W., Morton, Minn.
Reed, R. Harvey, Rock Spring, Wyo.; Roseberry, B., Florence, Colo.
Smith, J. Whitefield, Bloomington, Ill.; Sternberg, Geo. M., Washington, D. C.; Stilson & Gates, Battle Creek, Mich.
Tebbetts, Frank M., Chicago, Ill.; Todd, G. M., Akron, Ohio.
Van Dyke, A. D., Marysville, Pa.
Waxham, F. E., Denver, Colo.; Wilder, W. H., Chicago, Ill.